MATERIAL HANDLING

The Shear Pad Concept .....

A FLOW Packaging Engineering Rep

FLOW

PRODUCTION · AUTOMATION · PACKAGING · SHIPPING

MARCH 1957

CONVEYING BY AIR

. . . page 73

AN INDUSTRIAL PUBLISHING CORPORATION MAGAZINE

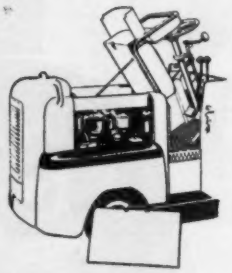
Is an **Allis-Chalmers Fork Truck** *Easy to Service?*

Show this to Your Own Serviceman and Ask Him

If your maintenance man isn't already familiar with Allis-Chalmers fork trucks, show him this ad — then ask him how much maintenance time its easy-to-service design would save. Let him tell you how much time he thinks would be saved on these two operations:

1

Strip for service

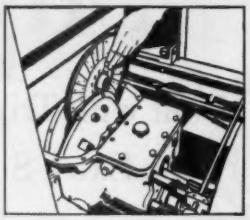


Lift out two side panels. Tip seat forward. Remove engine cowl by unscrewing two wing nuts. All done. Everything is at your finger tips — engine, carburetor, oil filler tube, oil filter, fuel pump, battery and ignition system.

Elapsed time — 22 seconds

2

Change the clutch



Take up floorboard. Remove clutch cover and bearing cap at rear of input shaft by removing cap screws. Slide input shaft back. Remove bolts in the pressure plate and lift out clutch plate. Slip in new clutch plate and reassemble. All done.

Elapsed time — 30 minutes

The time saved here can usually be measured in days.

These are only two of many examples. Another: the Allis-Chalmers fork truck can be stripped down to the bare frame by two men in only 22 minutes. Engine may be overhauled without removing.

This ease of servicing adds up to more hours on the job, but that's only half the story. Ask your Allis-Chalmers material handling dealer to show you the many features that account for more output to the hour, or write for a descriptive bulletin.

MATERIAL HANDLING DEPARTMENT, BUDA DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

BH-39

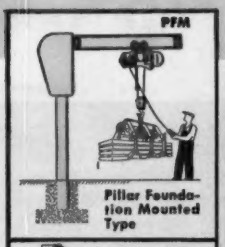
DOWNTIME: NONE — REPAIR COSTS: NONE

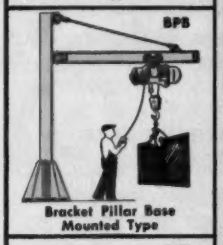
That's the report of Sungold Ammet Block Co., Miami, Florida, on their Allis-Chalmers 4,000-lb. fork truck after over three years of operation. A company spokesman further says, "We owned another fork truck and thought there was nothing like it until one day when it broke down we rented an Allis-Chalmers. We were sold on that machine right now — that's the reason we bought it. It's easy to maneuver, easier to get on and off of, and the shift levers are in a better position."

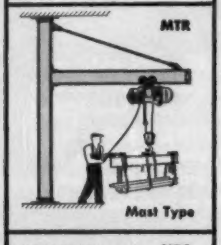
Circle No. 21 on Reader Service Card for more information

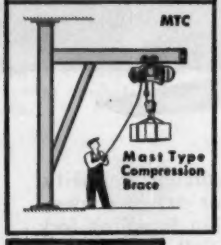
Industrial HEAVY DUTY JIB CRANES

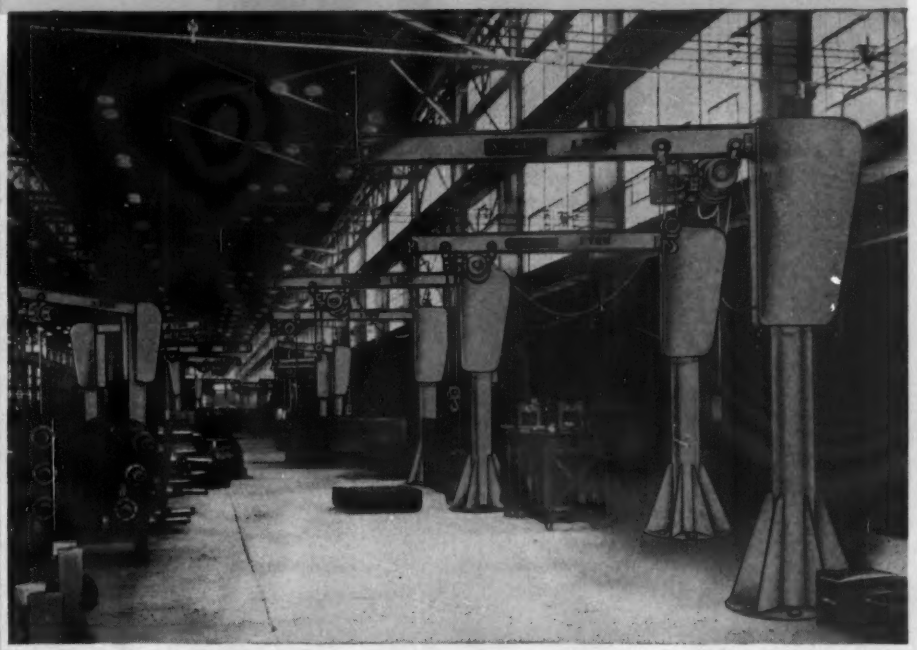
Precision Engineered and built for smooth efficient operation











PBM Pillar Base Mounted Type

The most "copied" PBM Jib Crane in Industry

Industrial PBM self-supported Jib Cranes are of all welded steel construction, rotate 360 degrees and have capacities up to 12,000 lbs. The rotating steel head revolves on 4 rollers and 9 precision ball bearings resulting in extremely smooth operation — unsurpassed by any other crane of its type. The high standard of workmanship and material, coupled with reliable performance make Industrial Jib Cranes your best buy.

Industrial manufactures 6 other types of Jibs and many models of Overhead Traveling Cranes to cover every need. Consult with Industrial for cranes to solve your material handling problems.

Industrial CRANES

INGERSOLL B-W BORG-WARNER

INDUSTRIAL CRANE & HOIST

Ingersoll PRODUCTS DIVISION

BORG-WARNER CORPORATION

GENERAL OFFICES

1530 SOUTH PAULINA STREET — CHICAGO 8, ILLINOIS

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EXPORT SALES: BORG-WARNER INTERNATIONAL, 36 SOUTH WABASH AVE., CHICAGO, ILLINOIS

Circle No. 79 on Reader Service Card for more information

BAKER announces an ALL NEW PNEUMATIC-TIRED FORK TRUCK

This Baker FGF-40, 4,000-lb. YARDLOADER, **first in the new line of Baker pneumatic-tired gas fork trucks, has many new design features for greater maneuverability and more dependable performance. It is *fast*—top speed with load, 8.6 mph. It is *compact*—only 48 inch wheelbase, and minimum overhang—*and only 79 inch turning radius.* Low center of gravity makes this possible without sacrificing stability.**

Absense of cowl provides maximum visibility. Power steering and many other driver conveniences make it one of the easiest handling fork trucks—and one of the safest. Full 130-inch lift, with single or dual cylinder. Truck-loading mast available with 110-inch lift and 71-inch overall height . . . For complete information ask for Bulletin 1382.

Baker® industrial trucks

THE BAKER-RAULANG COMPANY
1219 WEST 80th STREET • CLEVELAND 2, OHIO
A Subsidiary of Otis Elevator Company

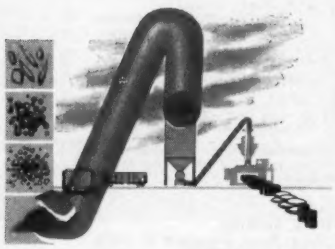
Otis 7G1

Circle No. 14 on Reader Service Card for more information

MARCH 1957
VOL. 12, NO. 6

FLOW

DEPARTMENTS



THE COVER

How applications of pneumatic bulk handling systems are expanding as research and development increase the number of products they can successfully handle.

FEATURES

PACKAGING AND SHIPPING SECTION

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APPLIED HYDRAULICS
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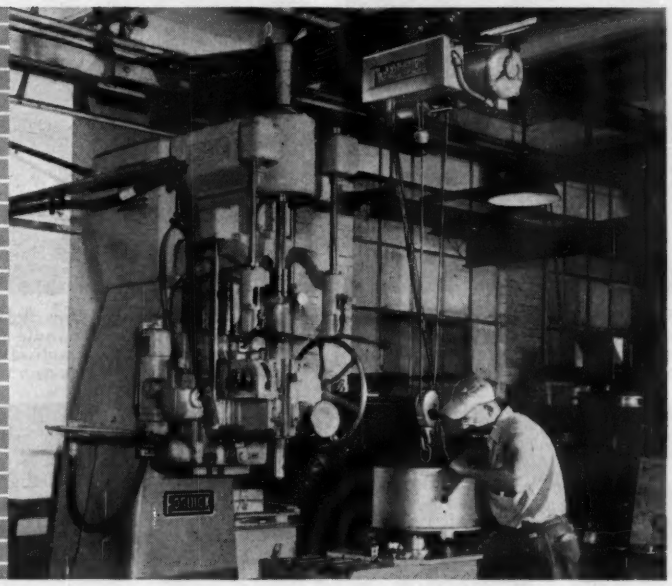
ACCO products

The WRIGHT Hoists for Dependability

NOW! a New 2-Speed WRIGHT Frame 1 Hoist permits precise, gentle positioning of production work

The picture below shows a WRIGHT Frame #1, 2-speed Electric Hoist placing heavy equipment gently on a very precise machine. This is just one of the applications for which this hoist is particularly well suited.



CAPACITIES 500 TO 2000 LBS

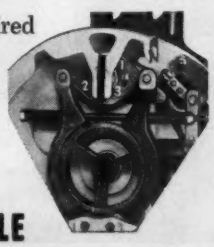
Compare the flexibility, versatility and dependability of these WRIGHT Hoists with other types of hoists:

2 SPEEDS • A fast lifting and lowering speed—and a slow speed (¼ the rate of the fast speed) for precise, gentle positioning of work—accomplished by use of 1800/450 RPM motors.

FLEXIBILITY • Travel of hoists on rail or jibs is limited only by the availability of electrical service.

SERVICE AVAILABILITY • Failure of power source is quickly and easily remedied for individual electric hoists.

MAINTENANCE • Very little maintenance required and this is easily handled on WRIGHT hoists.



Brake adjustment on all WRIGHT *Speedway* Electric Hoists is foolproof. There is nothing to adjust but the cam!

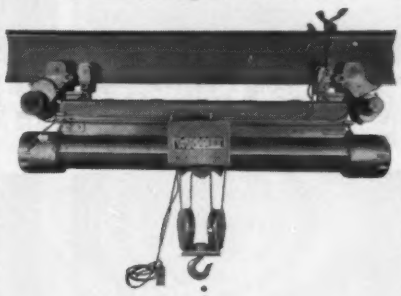
ACCO

Wright Hoist Division
AMERICAN CHAIN & CABLE

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

EXTRA-LONG-LIFT ELECTRIC HOISTS

Single layer of cable in machine-grooved drum



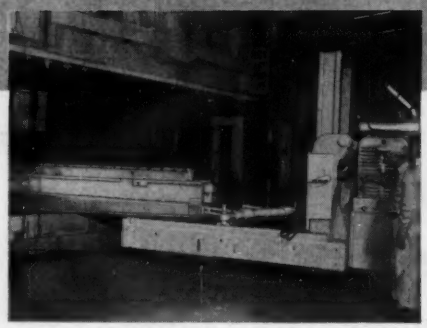
3 TON	95 FEET
2 TON	107 FEET
6 TON	115 FEET
1 TON	120 FEET
5 & 10 TON	125 FEET
4 TO 7½ TON	135 FEET

***Write** for complete information on the sensational new WRIGHT 2-Speed Hoist and the Extra-Long-Lift Hoist shown above.*

Better Value

17 TIMELY TECHNIQUES

1 Palletless Carton Handling. Clamp truck picks up right number of boxes, moves them into carrier, deposits them in position—without manual handling.

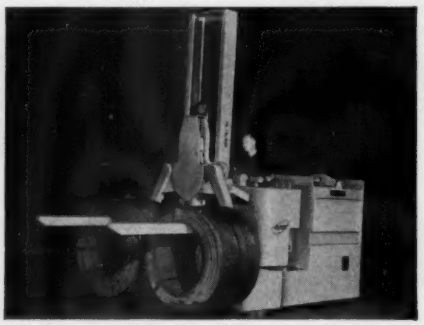


2 Die Handling Delight. Long narrow die is hydraulically eased onto press bed. Pulling heavy die back onto the die handling truck is equally easy.

3 Tough Performer in Tannery. High lift platform truck withstands constant exposure to water and grease. Here it holds box at proper level for easy pelt transfer.

7 Neat Stacking. Pallet boxes holding parts destined for product assembly are stored out of the way by ELPAR fork truck.

8 Low-Cost Loading. Racks of automatic transmissions are moved right into trailer. Low operating costs of electric trucks are one reason for preference by auto makers.

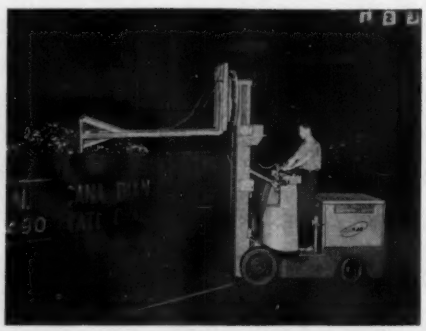


9 Two for the Cost of One. Split ram on steel mill truck can handle two coils abreast...or can be hydraulically brought together to act as single-ram truck.

12 No Production Bottlenecks. ELPAR electric fork truck keeps automotive forgings moving between production points. Dependable performance prevents down-time.

13 Wise Warehousing. All beer storage space is put to use and highway trucks are loaded fast with compact, maneuverable "Cargo Scout".

17 Quick Scrap Loading. ELPAR truck with rotating head dumps 2500-pound load of scrap into gondola...

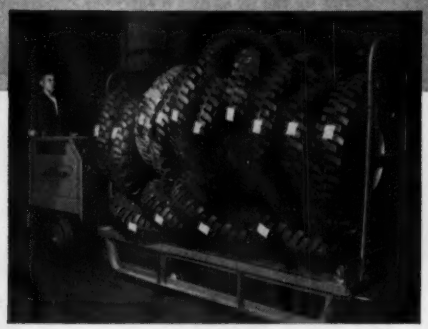


...Operator then attaches simple, sturdy device which levels the scrap—assuring complete use of gondola capacity.

SEND FOR FREE LITERATURE

General Catalog
Individual Truck Bulletins
Engineering Bulletins

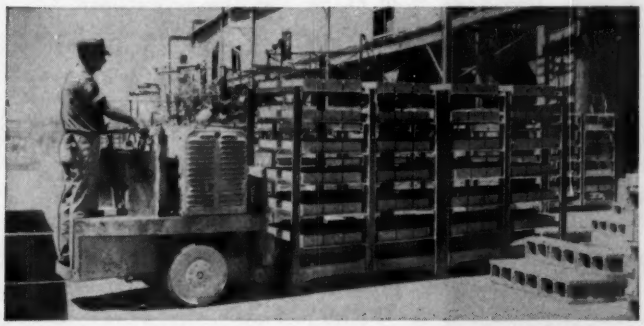
WITH ELPAR® TRUCKS



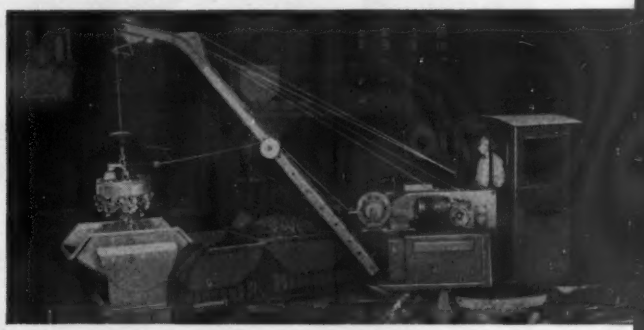
4 **Long Load, Limited Space.** Rack of tires takes fast trip through narrow aisle. Low lift platform trucks cost much less than fork trucks of comparable capacity.

5 **Smooth Trip to Heat-Treat.** Truck with rotating forks dumps load of forgings into hopper feeding the furnace. Once a big time-consumer, job now takes seconds.

6 **Insurance Against Damage.** Hydraulic load stabilizer clamps down on unsteady load—no part of it can fall off the pallet.



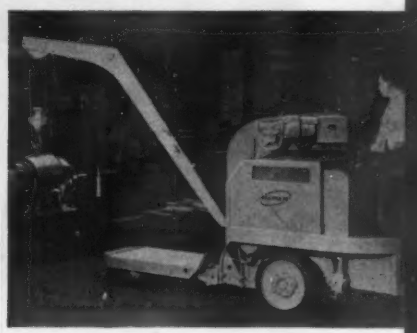
10 **Long Load, Long Trip.** Moving racks of building block is a continuous, all-day job for gasoline-powered low lift platform truck.



11 **Quick Pick-Up.** In foundry cupola charging operation, ELPAR crane with magnet places correct amount of scrap, sprue and pig iron into dump bucket.

14 **Speedy Roll Handling.** ELPAR truck with rotating roll clamp offers unmatched advantages in car unloading, safe handling and efficient storage.

15 **Pallet Cost Saved.** Clamp-equipped ELPAR handles one, two or four drums. No need for pallets, and manual drum handling is eliminated.



16 **Versatile Maintenance Helper.** With this combination unit, crane spots loads where needed while low lift platform carries tools, materials.

Save More with ELPAR Trucks because...

YOU ENJOY GREATER ECONOMIES

Quiet, fume-free ELPAR electric trucks are built to do the *tough* jobs year after year . . . yet they cost only pennies per day to operate and maintain.

YOU CHOOSE THE TRUCK YOU NEED

. . . From over 100 models in all types: fork trucks, low and high lift platform trucks, cranes, ram trucks plus specially-engineered units and attachments.

YOU GET EXPERT ASSISTANCE

Your Elwell-Parker representative draws upon Elwell-Parker's half-century of experience to help you realize greatest efficiency. Call him today.

THE ELWELL-PARKER ELECTRIC COMPANY

4233 ST. CLAIR AVENUE • CLEVELAND 3, OHIO

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LETTERS TO THE EDITORS

Extra Copies Wanted

To Flow:

We found your article entitled "How Close is the Automatic Warehouse" in the January issue of FLOW Magazine very interesting.

Could you possibly send us four or five reprints of this article?

E. R. Stonefield
Logan Co.
Louisville, Kentucky

Sent.

Exactly 3 Years Ago

To FLOW:

We are interested in securing copies of the publication "LP Gas Conversion Saves $300 per Fork Truck." We have been advised to contact you in this instance. Are you able to supply these booklets?

Russ McIlwain, General Manager
Valley Industrial Trucks, Inc.
Youngstown, Ohio

An article bearing this title appeared in the March, 1954 issue of FLOW. We regret that neither reprints nor tear sheets are available at this time.

Heat Treating Reprints

To FLOW:

Please send me five tear sheets or reprints of the article: "Complete Mechanization of Heat Treating". This appeared in your January, 1957 issue.

If you limit readers to fewer than five copies of any reprints, please send me as many as you can.

W. Ross
Industrial Heating Department
General Electric Company
Shelbyville, Indiana

Sent.

LETTERS

Continued

Who Makes It?

To FLOW:

We wish to stack one skid of paper on top of another to make a stack two skids high. The weight of each skid is approximately 3000 pounds, and the height of each skid would not exceed five feet.

As the machine will only be used occasionally and in one location, we want a piece of equipment that can be pushed by hand and which will raise the skids by power obtained from plugging into an electric lighting circuit.

Butler Cox, president
Fine Papers Incorporated
Rochester, New York

To FLOW:

We are interested in installing doors on a new warehouse building through which lift trucks can operate without appreciable delay. We understand that there are a number of doors manufactured that are bumper operated. We would appreciate any information you might be able to furnish.

Walter W. Bird, president
Birdair Structures Inc.
Buffalo, New York

To FLOW:

We would appreciate it if you could send us the names of 2 or 3 manufacturers that manufacture a nailing device, air operated and equipped with a magazine for nails of between about 3 and 5 inches, to be used to force nails into wooden boxes like shipping crates for machine tools. This is a hand tool.

Paul Roach
Columbia Commerce & Credit Corporation
New York, New York

These are typical of letters received from FLOW readers inquiring about material handling equipment to solve a particular problem. We are pleased to provide names of manufacturers whenever possible.

. . . how else could this job be handled so well?

Through exclusive features like these a Gerlinger fork lift truck enables each operator to multiply "manpower" and give you a new concept of profitable mass-handling:

- Exclusive Floating-Type Boom Action—faster, friction-free lift
- Counter-active Weight Distribution—better traction and maneuverability
- Pivotal Mounted Steering Assembly—stabilized load on any road
- Heavy-Duty Steel Channel Frame—bonus years of reliable service
- Maximum-Power Torque Converter Drive—smoother operation, less wear

If you move and stack loads between a few hundred pounds and twenty tons, look to the combined Towmotor-Gerlinger line to meet the most diversified specifications. This great new combination brings you the most complete range of fork lift truck capacities available from one source. More extensive service to match it, too.

Get catalog describing the lift trucks that will do the best job for you. Address: Gerlinger Carrier Co., Dallas, Oregon.

Leaders for 38 years in building Fork Lift Trucks and Carriers

TOWMOTOR® THE ONE-MAN-GANG -GERLINGER

Gerlinger Carrier Company, Dallas, Oregon is a subsidiary of Towmotor Corporation, Cleveland, Ohio

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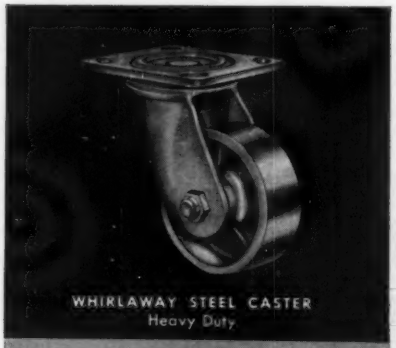
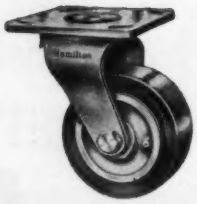
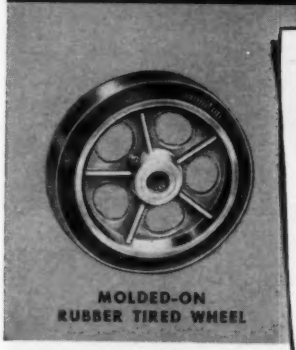


WHIRLAWAY STEEL CASTER
Heavy Duty



FORGED STEEL CASTER
Regular Duty

AIR-FLO STEEL CASTER
Extra Heavy Duty



MOLDED-ON
RUBBER TIRED WHEEL

HAMILTON IS HEADQUARTERS for industrial casters and wheels

If you use industrial casters or wheels—whatever the application . . . whatever the quantity—get a quotation from Hamilton. The Hamilton line is extensive and exceptionally complete. Hundreds of styles and sizes are offered, including swivel and rigid casters of forged steel, plate steel, cast steel, pressed steel and semi-steel. Single and double wheel models. Wide range of capacities—up to 2,500 lbs. per caster.

Wheels available include steel, semi-steel, molded-on rubber-tired wheels, renewable rubber tires, full pneumatics, semi-pneumatics, molded plastic and composition rubber wheels. Many are available with choice of bearings, including Hyatt and Timken roller bearings.

Make Hamilton your headquarters for industrial casters and wheels. Write today and tell us your requirements. Prompt quotations.

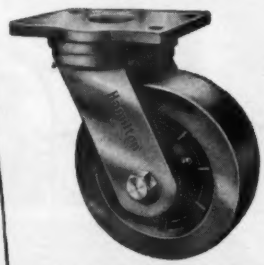
SEND TODAY FOR YOUR COPY OF THE HAMILTON CASTER AND WHEEL CATALOG!

Serving Industry for Nearly Fifty Years

THE
Hamilton
CASTER & MFG. CO.
1672 Dixie Highway Hamilton, Ohio

MOLDED PLASTIC WHEEL

V-GROOVED WHEEL CASTER



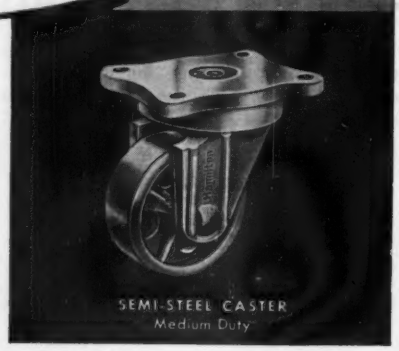
FORGED STEEL CASTER
Extra Heavy Duty

SEMI-PNEUMATIC
TIRED WHEEL

PNEUMATIC TIRED WHEEL

KALBER DOUBLE
WHEEL CASTER

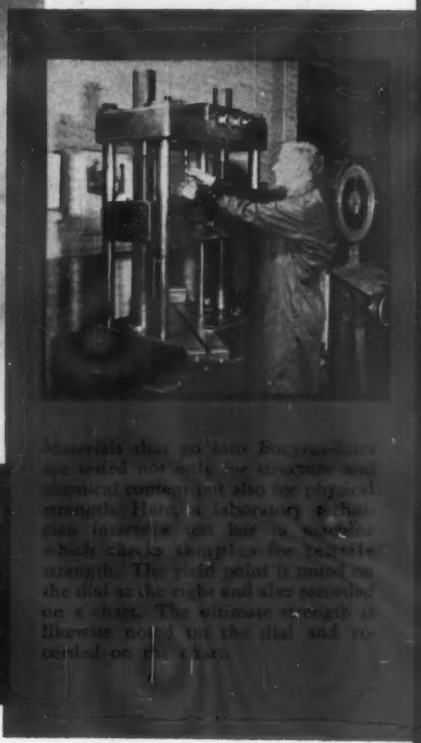
SEMI-STEEL WHEEL



SEMI-STEEL CASTER
Medium Duty

Circle No. 67 on Reader Service Card for more information

How QUALITY CONTROL Puts HIGH-PROFIT POTENTIAL Into Bucyrus-Erie Cranes



On material handling jobs all over the country, Bucyrus-Erie cranes stand out — for ease of operation, economy, and dependable, long-term service. Performance like this results from careful design, good workmanship, and use of the best materials . . . held to rigid standards by the company's own metallurgical laboratory.

Through all phases of production, this department — with a staff and equipment rivalling those of firms specializing in metal production — maintains constant control over the process. Take the production of steels, for instance.

Samples of every "heat" are subjected to physical and chemical tests whose results assist the foundry in maintaining the specified analysis of the steels. After steels have been heat treated to obtain the required strength, hardness, and toughness, a microscope is used to examine the metal structure. Only when steels conform to ALL specifications are they incorporated into a Bucyrus-Erie machine.

Laboratory control of foundry sands maintains uniformity of sand mixes and helps assure high-quality castings. This requires a number of processes and the use of special equipment to establish the correct permeability, flowability, green strength, moisture content, and other physical properties of foundry sands.

Close attention to quality is only one of the reasons why Bucyrus-Erie cranes should have a key role in your material handling program. They have a host of outstanding features that will mean lower handling costs to you. Your nearby Bucyrus-Erie distributor will be glad to talk over your material handling problems and help you select the right size crane for your requirements. Write, call, or see him soon.

255E56C

BUCYRUS ERIE

South Milwaukee, Wisconsin

Circle No. 20 on Reader Service Card for more information

CALENDAR OF EVENTS

March 16-18
Annual Meeting, Folding Paper Box Association of America
Drake Hotel
Chicago, Illinois

March 25-29
4th Semi-Annual Plant Layout Technical Workshop
Greater Pittsburgh Airport Hotel
Pittsburgh, Pennsylvania

April 8-10
Spring Meeting—American Society of Mechanical Engineers
Dinkler-Tutwiler Hotel
Birmingham, Alabama

April 9
Directors and Membership Meeting —Material Handling Institute, Inc.
Edgewater Beach Hotel
Chicago, Illinois

April 9-11
Caster and Floor Truck Manufacturers Association Meeting
The LaSalle Hotel
Chicago, Illinois

April 11
Spring Meeting—Association of Lift Truck and Portable Elevator Manufacturers
Edgewater Beach Hotel
Chicago, Illinois

April 25-26
12th Annual SAM-ASME Management Engineering Conference
Hotel Statler
New York, New York

April 26-28
Annual Convention Meeting—Material Handling Equipment Distributors Association
Chalfonte-Hadden Hall Hotel
Atlantic City, New Jersey

April 29-May 3
7th National Materials Handling Exposition
Convention Hall
Philadelphia, Pennsylvania

June 11-13
Western Plant Maintenance and Engineering Show
Civic Auditorium
San Francisco, California

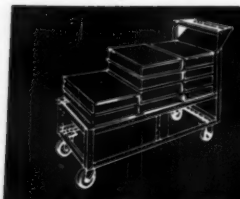
On the go . . . always going . . . seldom gone

Thousands of hours have gone into engineering better performance into this new *Clarklift*. Many of those hours were spent getting *down* time *out* of it. The results are qualities you *can't* see readily—a ruggedness of construction that defies the punishment of the most severe service. And so the *Clarklift* goes . . . and goes . . . and goes.

What's more, there's unmatched performance built into this truck. Safety, too. And when we say routine maintenance, we mean *routine*. And these are things you *can* see—either on the truck itself or in performance records. Or in savings that will set entirely new records for the lift truck industry. Try this new *Clarklift*. You'll see what we mean.

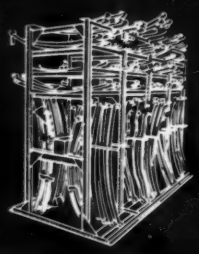
Industrial Truck Division
Clark Equipment Company
Battle Creek, Michigan

CLARK® EQUIPMENT

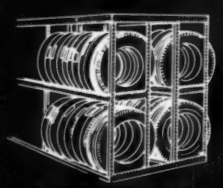


HAND TRUCK OF STRUCTO
Make caster-mounted equipment to suit your specific needs.

STRUCTO WORK BENCH KIT
The ideal way to discover Structo's advantages. Ready to assemble.



STORE ODD SHAPES NEATLY
Springs are easily racked in this Structo assembly. Make your own rack to store any shape object.



STACK YOUR HEAVY, BULKY ITEMS
Structo offers superior strength and rigidity, enables you to safely, economically stack heavy items.

EASY VERTICAL LIFTING

Colson ®

SMOOTH HORIZONTAL ROLLING

INSTEAD OF BUYING COSTLY, READY-MADE, SINGLE PURPOSE EQUIPMENT...USE

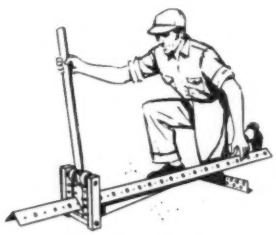
STRUCTO

THE PRE-ENGINEERED ALL-PURPOSE ANGLE

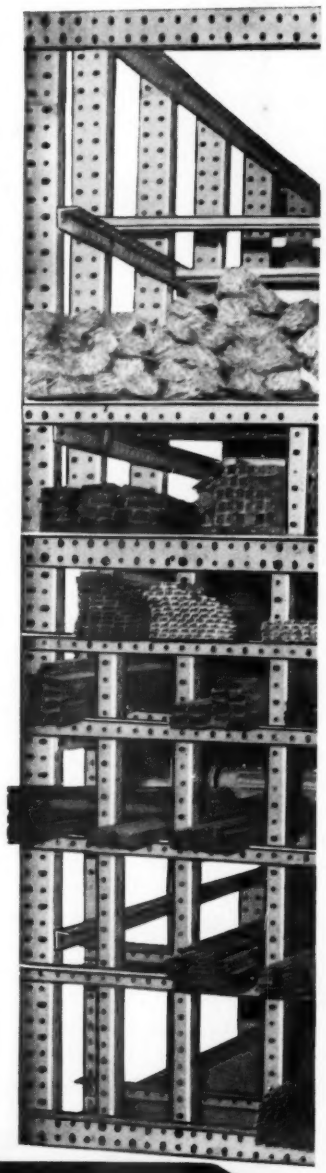
Only your own imagination limits the usefulness of this versatile framing material.

Structo is thoroughly engineered: Both sizes (1½" x 1½" and 3" x 1½") come in 11 and 14 gauge, and are interchangeable. Regardless of size used, Structo's unique punched pattern permits cutting for positive bolting lineup at every 1½" point—and without leaving open slots, holes or jagged edges. Only 3" of Structo is needed for a butt or lap splice—a minimum of waste in a material that can be used over and over. Only two bolts required for rigid joint.

Structo's slots are short to prevent slipping, and increase structural strength by making all bolts load bearing. Structo is available in 10 to 12 foot lengths, 10 pieces to the bundle, and stores in one-tenth of the space required for equivalent lumber.



Structo Cutter is portable, inexpensive, easy to use . . . cuts clean, fast and square every time.



With a wrench, a Structo Cutter, lengths of Structo angle and supplied nuts and bolts, you can build **supports • catwalks • stands • shelving • counters • ladders • steps • partitions • racks • scaffolding • bins • small buildings • benches • truck body frames.**

Write or phone for recommendation by specialists

The Colson Corporation · General Offices, **Elyria, Ohio**

Factories in Elyria, Boston, Toronto

Circle No. 32 on Reader Service Card for more information

Why will a CLARKLIFT hold up longer?

Can you be sure that a *new* model truck will (1) perform better and (2) *stay* on the job with less time out? You can with the new *Clarklift:* Clark has built over 250,000 lift trucks . . . far more than any other builder. This experience helps us make them better. Then Clark tests the new truck for thousands of hours—equal to many years of actual service.

We've already *proved* the new safety roller-upright reduces friction and wear, has longer life; unitized frame construction with built-in sump and gas tank, providing greater rigidity; a vanadium steel steer axle with greater tensile strength; big rear wheels to reduce shocks from uneven floors. And many more. Ask your Clark dealer for a demonstration.

Industrial Truck Division
Clark Equipment Company
Battle Creek 13, Michigan

CLARK EQUIPMENT

Circle No. 29 on Reader Service Card for more information

HIGHLIGHTS of the MONTH'S NEWS

Common Objectives

RECOGNITION of the increasing importance of the close relationship between material handling and maintenance was prominent at the recent plant maintenance exposition in Cleveland.

In the Cleveland show, almost half of the "maintenance" equipment was of the type one would expect to see at a material handling exhibition. And the technical papers were in accord with the displays. Maintenance by and for material handling equipment gained a prominence not before achieved in connection with this annual exposition, as the following typical statements show:

"The importance of having good storage facilities serviced by adequate material handling equipment—and of having complete records of all materials on hand or on order—cannot be over-emphasized.

. . . Planned systems in control of original design, training of operating and supervisory personnel, closely checked equipment installations, a well trained crew of full-time inspectors, planning and scheduling of all maintenance activities, and an efficient system for obtaining and warehousing spare parts have been my guide posts in my maintenance organization." . . *Fred M. Gross, Superintendent of Maintenance, Armco Steel Corp.*

"The big source of routine maintenance . . . is the material handling equipment to bring the thousands of tons of raw materials to the furnaces and to take the thousands of tons of products and debris away. . . . Overhead cranes and chargers . . . have to be in shape at all times to handle the ladles . . . safely. Contactors and lubrication require special attention because of the heat and dirt conditions. A dividend in maintenance comes from better control

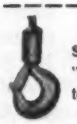
YOU NAME IT...'TUGIT' CAN HANDLE IT *AT ANY ANGLE*

The lifting and pulling jobs 'Tugit' does easily every day are countless. It's geared like the most efficient chain block but is built for use at any angle, anywhere. The small size weighs a mere 16½ lbs. but can lift or shift a 1-ton load with only a 40-lb. pull on the handle. That's 36% less effort to handle capacity loads than the average ratchet-lever hoist requires. It lifts and lowers smoothly even in tight spots where no regular hoist will fit. Loads can be moved as little as 3/32" when accurate spotting is a must.

Every 'Tugit' part is built tough for extra safety. The handle can't kick back. The hooks open slowly under overload — give visible warning of danger. Feature for feature, 'Tugit' is today's best value in portable lifting and pulling tools. 1 and 2 ton capacities available. Both are tool-box size. Prices start at $63.50. *Ask your "Shaw-Box" Distributor for a demonstration or write us for Bulletin 388.*

'TUGIT' DOES ALL THESE JOBS AND THOUSANDS MORE

Assembles parts . . . closes freight car doors . . . stretches cable . . . pulls pipe together . . . handles heavy repair parts . . . moves machinery . . . lifts furnace covers . . . joins conveyor belts . . . unearths posts and stumps . . . erects fences . . . hauls boulders . . . lifts truck tires . . . installs overhead equipment . . . straightens frames . . . positions motors . . . closes hopper doors . . . operates valves . . . tightens power lines . . . booms poles and pipes to trucks.



Safety Hooks can be provided on 'Tugit' to "lock in" slings and other attachments used to support loads.

'Tugit' Carrying Case. Durable dust-tight canvas, sewed and riveted to wooden base plate. Has slide fastener and leather handle. Makes 'Tugit' easy to transport from job to job.

57 B-7C

MAXWELL MANNING M&M & MOORE INC. TRADE MARK

'Tugit'® HOISTS

MANNING, MAXWELL & MOORE, INC.

SHAW-BOX CRANE & HOIST DIVISION

366 West Broadway • Muskegon, Michigan

Builders of "SHAW-BOX" and 'LOAD LIFTER' Cranes, 'BUDGIT' and 'LOAD LIFTER' Hoists and other lifting specialties. Other Divisions produce 'ASHCROFT' Gauges, 'HANCOCK' Valves, 'CONSOLIDATED' Safety and Relief Valves, 'AMERICAN' and 'AMERICAN-MICROSEN' Industrial Instruments, and Aircraft Products.

In Canada: *Manning, Maxwell & Moore of Canada, Ltd., Avenue Road, Galt, Ontario.*

Circle No. 99 on Reader Service Card for more information

HIGHLIGHTS

Continued

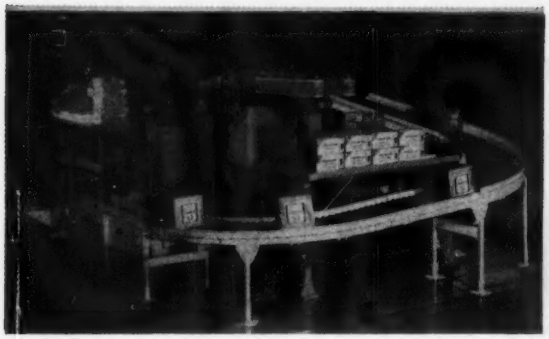
life in this atmosphere. Outages for maintenance on these cranes must be carefully planned so as not to interfere with production." *John R. Lowey, Assistant Superintendent, Mechanical Department, Cleveland District, Republic Steel Corp.*

"Several years ago we installed a pneumatic sand conveying system. We wanted to distribute sand to molder stations quite a distance apart and not in-line. In the original installation, short radius curves were put in from the transporter, and our sand stoppage in these pipes was serious. To eliminate this trouble, we had to revamp the layout and install long-radius curves. The replacement of the pipe is the big item in the maintenance of this system . . . we are now using a clamp-type joint which makes the replacement of the sections of pipe easier than the bolted flanges formerly used."—*S. A. Simonson, Plant Engineer, Chicago Hardware Foundry Co.*

"All good maintenance management systems provide a method for reporting cost downtimes and other factors that influence maintenance performance. A careful study should be made to see that this information is properly disseminated, for this can serve the dual purpose of providing control on a matter-of-fact basis and be used to stimulate interest. This stimulation of interest is gained by having those concerned feel that management thinks enough of its employees to keep them informed of all matters rightfully related with their work."—*Harold M. Sylvester, Special Assistance for Maintenance, Office of Assistant Secretary of Defense.*

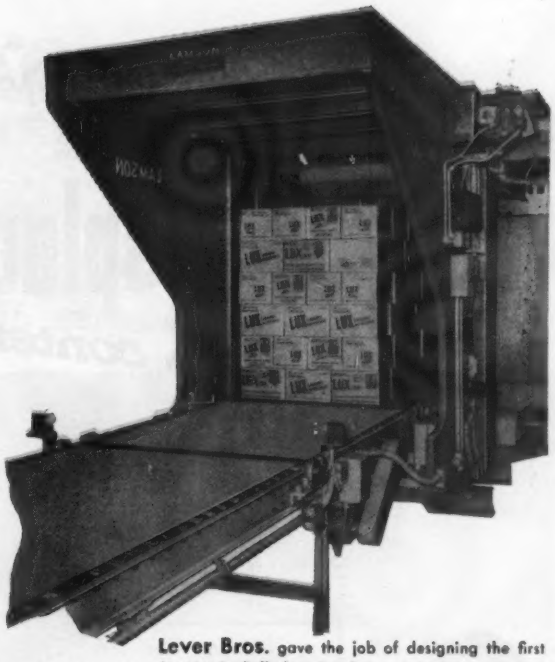
"The establishment of standards has made it possible to materially expand our plant facilities with only minor additions to the dollar value of the stock carried in mechanical stores.

"A typical result of standardization is the casters used on push-trucks throughout the plant. At one time we had casters from at least a dozen different manufac-



National Biscuit Company's giant new bakery in Chicago is completely equipped with Lamson engineered conveyors.

Robertson Heating Supply Co., Alliance, Ohio, uses a Lamson Overhead Tow System to speed its order filling.



Lever Bros. gave the job of designing the first Automatic Palletless Loader to Lamson engineers.

do you move products like Coolies built the great wall... by hand?

Systematic work on the Great Wall of China began in 228 B.C., and was finally completed in 1644 A.D. Reaching a length of about 1400 miles, it is a testament to the back-breaking work of literally hundreds of thousands of Chinese. Today, you can't afford to move your products "Coolie-style."

In the package conveyor field, Lamson offers the broadest line. Nationally known companies depend on Lamson to engineer and install belt, gravity and live roll conveyors; continuous trolley systems; reciprocating vertical conveyors of all types; continuous combing verticals; and a broad line of automatic and semi-automatic pallet loaders.

Why not talk over your conveying problems with a Lamson engineer? He'll show you ways to cut costs and meet production schedules.

FOR FURTHER INFORMATION, CLIP TO YOUR LETTERHEAD

LAMSON

LAMSON CORPORATION

223 Lamson Street, Syracuse 1, New York

Plants in Syracuse and San Francisco
Offices in Principal Cities

- ☐ Have an engineer call me for an appointment.

Send me these bulletins:

- ☐ "Conveyor Facts"
- ☐ 28-page Roller Gravity Bulletin
- ☐ "Utilize the Air Rights"
- ☐ "Automatic Pallet Loader"

223

Circle No. 88 on Reader Service Card for more information

turers and with that many different sizes and types. Now we have standardized on one type . . . in 4, 6 and 8 inch size. The stock of casters and spare parts that is neccessary to carry is very nominal."—*Harold A. Burns, Manager, Production Engineering Department and Shops, Ansco Division, General Aniline & Film Corp.*

Handling Standards Gaining Acceptance

RESULTS of work by standards committees in material handling organizations are becoming more effective all the time. Just recently, notification of acceptance of an important standard was received from the American Standards Association. It is the 64-page dictionary, "Conveyor Terms and Definitions"—originally published by the Conveyor Equipment Manufacturers Association in 1952—now known as American Standard B 75.1-1956, UDC No. 621.867:001.4.

Some 1500 terms applying to conveyors and related equipment are included in this book, as well as nearly 100 line drawings. Copies have been placed in ASA libraries all over the world, and are being provided by conveyor manufacturers to state safety officials to help overcome confusion on safety provisions applying to conveyors. Copies can be obtained, at one dollar each, from CEMA, 1 Thomas Circle, Washington 5, D. C.

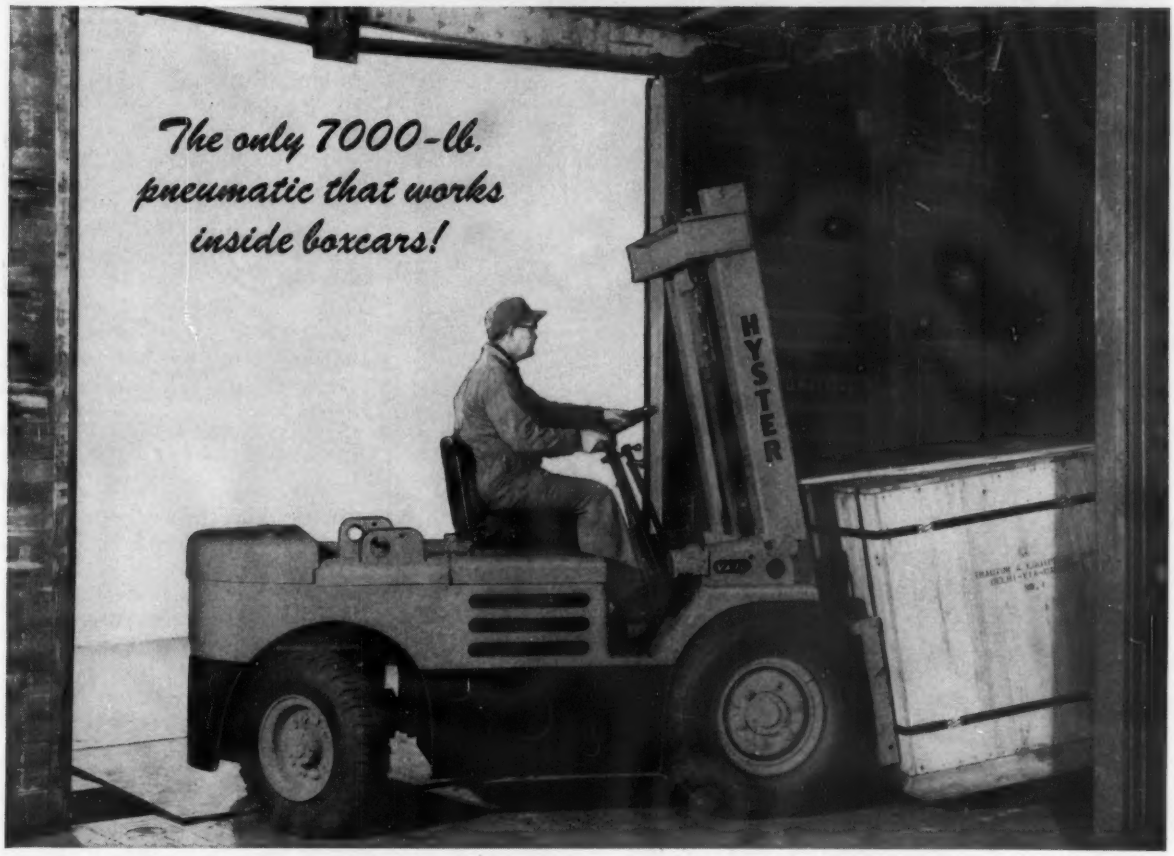
Another set of important standards is increasing in size and scope. It is the project of the Caster and Floor Truck Manufacturers' Association. Standards so far issued cover: Industrial Trailers (CFT-T1-56); Dead Skid Platforms (CFT-S1-56); Plastic Industrial Wheels (CFT-W3-56); Molded-On Industrial Wheels (CRT-W1-56); and Metal Industrial Wheels (CFT-W2-56).

Ed Leighton

Editor

NEW! A 7000-LB. PNEUMATIC DESIGNED ESPECIALLY FOR CLOSE-QUARTER OPERATION

(POWER STEERING STANDARD)



PERMITS NARROWER STACKING AISLES, LEAVES MORE SPACE FOR STORAGE

The Hyster 70 has shortest turning radius, narrowest and shortest overall dimensions of any 7000-lb. pneumatic! Indoors and outdoors, you can now have narrower stacking aisles—thus utilizing more space for storage.

The Hyster 70 incorporates many advanced features found in no other truck—which add up to making the Hyster 70 the most rugged, most easily maneuvering truck you've ever operated. But you'll have to drive one to appreciate the greater visibility, and the power steering that gives you *easier* maneuvering than your automobile (even under the most difficult operating conditions). For full information, call your Hyster dealer today!

Available with L-P Gas fuel system, diesel engine, dual wheels, plus a complete line of attachments.

Call your Hyster Dealer today. He is listed in your telephone directory under "Trucks-Industrial"

HYSTER COMPANY

2931 N. E. Clackamas, Portland 8, Oregon
1031 Myers Street, Danville, Illinois
Hyster N. V., Nijmegen, The Netherlands

FACTORIES: Portland, Oregon; Danville, Illinois; Peoria, Illinois; Nijmegen, The Netherlands

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NEWS from the SALES FIELD

Jack Igoe, Cleveland, Ohio, has been added by **Brooks & Perkins, Inc.** to its sales staff for Pusharound equipment. Igoe was formerly a material handling equipment salesman for Trans-Lift Handling Equipment Co. of Cleveland, a Pusharound dealer. He will be Brooks & Perkins' contact man for dealers in Western New York state, Western Pennsylvania, Ohio, West Virginia, Indiana, Kentucky, Tennessee, Alabama, Mississippi and Louisiana.

Three new district sales managerships have been announced by **Frederick E. Rau,** hoist sales manager of **The Yale & Towne Manufacturing Co. David P. McCarthy, Jr.** has been named Yale hoist district sales supervisor for the Pacific Northwest territory. **Ralph W. Worsey, Jr.** becomes district manager for hoist sales in St. Louis. **William C. Ruland,** formerly St. Louis district manager, is promoted to a similar position in the Detroit area.

Extensive promotions within its sales organization have been announced by **Inland Container Corporation,** according to **Clarence F. Smith,** first vice president. **R. B. Turner** is now division sales manager in charge of the offices in Middletown, Ohio; Detroit, Mich.; Erie, Pa.; and Ashtabula, Ohio. **F. D. McGovern** assumes a similar post in the New York and Biglerville, Pa. offices. **W. C. Akers** becomes plant sales manager in Middletown,

This Whiting Crane at Continental quickly carries heavy coils of wire from storage to production—keeping machines busy without jam-up.

How Continental Steel's "special" cranes pay off!

Continental Steel Corporation, Kokomo, Indiana, depends on three "special" Whiting Cranes to keep production flowing fast. Two of them are 5-ton overhead cranes used to spot coils of wire accurately at automatic wire welding machines, then move the finished reinforcing fabric to shipping or storage. The third Whiting Crane is a low profile gantry with floor level hoisting drive. It moves all production in Continental's pickling department and has played an important part in increasing the company's wire production by nearly 50%. These cranes – like all Whiting Cranes – are "special" because each is custom engineered to do a specific job, day in and day out, with a minimum of maintenance.

WHITING CORPORATION, 15659 Lathrop Avenue, Harvey, Illinois

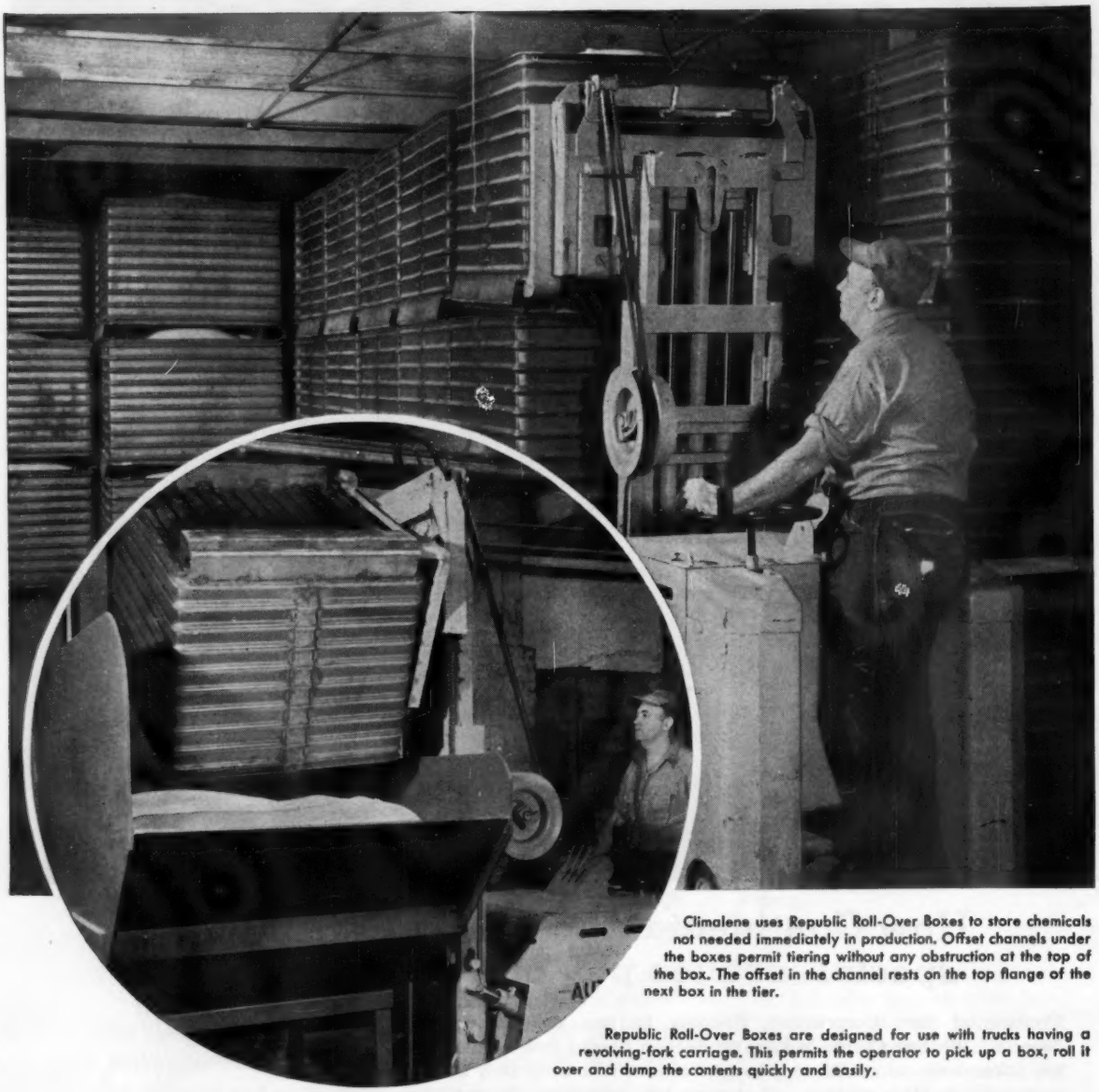
SEND FOR THIS REPORT!

An illustrated 6-page case study, "Custom Built Whiting Cranes for Continental Steel Corporation" tells how these cranes were engineered to solve special problems. Write for a copy today.

MANUFACTURERS OF CRANES, TRAMBEAM HANDLING SYSTEMS, TRACKMOBILES, FOUNDRY, RAILROAD AND CHEMICAL PROCESSING EQUIPMENT

Circle No. 158 on Reader Service Card for more information

HOW TO SPEED HANDLING, CUT COSTS, SAVE MAN-HOURS,



Climalene uses Republic Roll-Over Boxes to store chemicals not needed immediately in production. Offset channels under the boxes permit tiering without any obstruction at the top of the box. The offset in the channel rests on the top flange of the next box in the tier.

Republic Roll-Over Boxes are designed for use with trucks having a revolving-fork carriage. This permits the operator to pick up a box, roll it over and dump the contents quickly and easily.

REPUBLIC

REPUBLIC STEEL

World's Widest Range of Standard Steels

Circle No. 125 on Reader Service Card for more information

REDUCE LOSS, SAVE SPACE

CLIMALENE COMPANY DOES IT WITH THE HELP OF REPUBLIC ROLL-OVER BOXES

The Climalene Company's Chicago packaging operation is proof of the savings that can be attained when materials handling equipment is engineered for the job.

Originally, chemicals used in the manufacture of Climalene were received in 100-pound bags in box-car quantity. Unloading one car and delivery of the bags to the mixing room required the services of five men and consumed six man-hours of time. This did not include the subsequent time required to open the bags and dump the contents into the mixing bins.

Then, because of a production increase, Climalene switched over to bulk shipment, receiving the chemicals in 60-ton hopper cars—giving a substantial saving in bags and bag disposal. This presented an entirely new handling problem. Republic Materials Handling Engineers were contacted and helped work out a sift-proof, bulk-handling system that is both fast and economical.

This new system, built around the use of Republic Roll-Over Boxes, provides these cost-saving advantages:

(1) One man using Roll-Over Boxes can now unload a complete car in considerably less than half the man-hours required under the old system, providing a substantial yearly savings.

(2) When used in combination with fork trucks having revolving carriages the boxes can be rolled over and the contents dumped, thus saving several handling steps.

(3) Design and construction features of Republic Roll-Over Boxes permit tiering to any practical height, thereby saving floor space.

(4) Chemical loss caused by bag breakage is eliminated.

(5) The bag-disposal problem is eliminated.

What about your plant? Perhaps a specially engineered or standard unit could cut your costs or simplify an operation. Why not talk over your problem with a Republic Engineer? There's no obligation. Contact the nearest Republic Materials Handling Representative. Or send us the coupon.

STEEL

and Steel Products

SPEED HANDLING of heavy materials, like bar stock, with Republic Chain Slings, Attachments and Accessories. All Republic Chain Slings are proof tested and warranted to meet or exceed specifications. They provide an exceptionally high degree of safety. Republic's Bolt and Chain Division makes chain slings in Alloy Steel, High Test Steel and Wrought Iron. Republic Chain Engineers are always available to help you select the proper chain for your particular requirements.

SAVE SPACE and simplify palletizing and stacking of bulky, uneven, odd-lot and fragile materials with Republic Steel Pallet Racks. Tubular steel supports adjust every six inches to handle palletized material of any height. Two-way entry permits loading and unloading from either side. Select single pallets from any level without restacking. Write for complete description, specifications and quotations.

REPUBLIC STEEL CORPORATION
Dept. C-3349
3196 East 45th Street
Cleveland 27, Ohio

☐ I am interested in more information on Materials Handling Equipment.
☐ Have a Materials Handling Engineer call.
Send additional information on: ☐ Chain Slings ☐ Pallet Racks

Name_____ Title_____
Company_____
Address_____
City_____ Zone_____ State_____

SALES FIELD

Continued

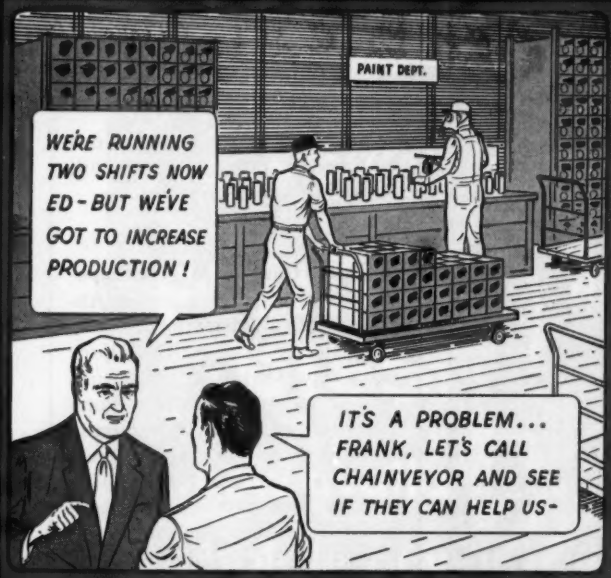
Ohio, and is succeeded as assistant manager there by **J. V. Williams. K. W. Hall** has been named plant sales manager at Ashtabula, Ohio. He was formerly assistant sales manager at Erie, Pa., and is succeeded there by **W. J. Baerresen.** Baerresen, in turn, is replaced as assistant plant manager at Indianapolis, Ind. by **D. E. Powers. H. M. Humphries** becomes assistant sales manager of the New York district, and **J. F. Smith** becomes district sales manager in Columbus, Ohio.

Three new field force assignments have been made by **Chisholm-Moore Hoist Division** of **Columbus McKinnon Chain Corporation. George P. Long,** in the Pittsburgh territory, is assigned to represent Industrial Chain in the Ohio Valley Region. **Tom Mulry** will represent Chisholm-Moore Hoists in the same area. Tom G. Blunden, Pacific Northwest territory, will represent Industrial Chain in the Pacific Coast Region.

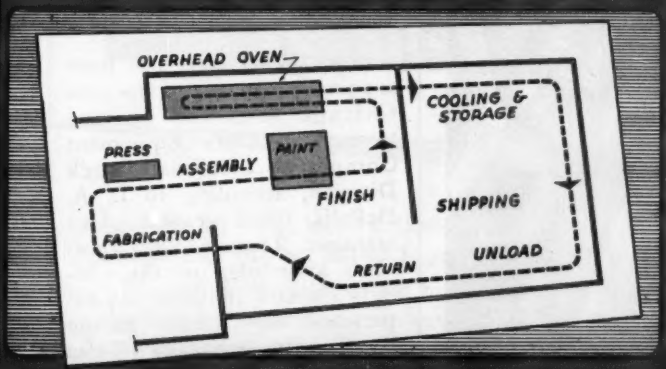
Mark C. Pope Associates, Atlanta sales representatives for **C & D Batteries, Inc.,** have added **Eugene L. Krauss** to the staff. Krauss was formerly a district manager for the Storage Battery Division of Thomas A. Edison, Inc.

Opening of a regional sales parts and service office in Chicago has been announced by **Wayne Manufacturing Company.** The new office will serve 14 central states, and will carry a complete stock of replacement parts for Wayne's line of power sweepers and electric industrial trucks and cars. **Wesley J. Zorn,** the firm's district representative in Chi-

CHAINVEYOR



Chainveyor has standard 18" radius curves, can even travel vertically up or down. This versatility saves floor space and can solve your most complex conveyor problems. Its dependability has been proved in all types of industry. Complete enclosure and hardened working parts assure long life with minimum upkeep.



Before, parts were hand trucked to paint area, unloaded, painted on each side in two operations, manually stacked for drying and again loaded and trucked to shipping. CHAINVEYOR'S solution was a system that rapidly moves parts from assembly thru painting and baking ovens to shipping ... without handling. Rotating carriers automatically turn the parts to insure even painting in less than half the time.

- *Chainveyor carries up to 80 pounds on 6" casters. Individual loads up to 120 pounds are supported by load bar attachments.*
- *Low in first costs. Chainveyor assists in increasing production and decreasing overall costs.*
- *Efficiency and simplicity of design does away with complicated and expensive idler and guide rails on standard curves.*
- *Duallino systems afford unlimited application to any stop and go production situation or in-process storage, combining power and free operation.*
- *Proved dependability by successful installations in all types and phases of industry.*

Send for your PLANNING FOLDER
Illustrated catalogue and complete details

QUALITY OVERHEAD CONVEYOR SYSTEMS

CHAINVEYOR CORPORATION

Circle No. 34 on Reader Service Card for more information

DISTRIBUTORS IN ALL PRINCIPAL CITIES

DISTRICT SALES OFFICES • NEWARK MILWAUKEE FLINT NEW ORLEANS

MAIN OFFICE • 5618 E. Washington Blvd., Los Angeles, Calif.

cago, will supervise sales out of the new office. Service will be under **Lester Nicoles.**

Ohio Hoist & Mfg. Company has recently appointed **Abraham M. Goldsmith,** of Long Island City, as its New York sales representative. Goldsmith will handle the firm's complete line of standard hand and electric chain and cable hoists, Ohiolite spur gear, differential and ratchet hoists, plain and geared trolleys, overhead jib and gantry cranes, and winches.

Bruce W. Thayer has been appointed manager of the new Chicago sales and service branch of **Clark Equipment Company's Industrial Truck Division,** according to **L. A. DePolis,** Clark general sales manager. Thayer has a thorough knowledge of the Chicago market, and also has experience with Clark, having been with the company's Tulsa and St. Paul distributors.

John E. McDonnell has been appointed New York district manager for the **Edison Storage Battery Division** of **McGraw-Edison Co.** The announcement was made by **Robbert H. Weeks, Jr.,** general sales manager. McDonnell succeeds Weeks in the New York position.

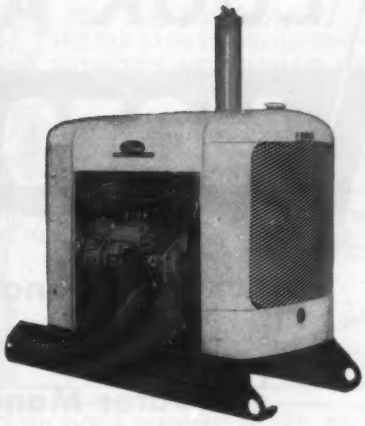
Union Steel Products Co. has added **Wrenn Bros.,** of Charlotte, N. C., as its southeastern distributors for USP Palletainers. In addition to the newly acquired Palletainer line, Wrenn Bros. acts as material handling equipment distributors for lift trucks, hand and pallet trucks, conveyors, casters, hoists, steel strapping and lift jack systems.

Announcing

THE

FORD "220" DIESEL

...now available as a complete power unit!



POWER UNIT

Ford

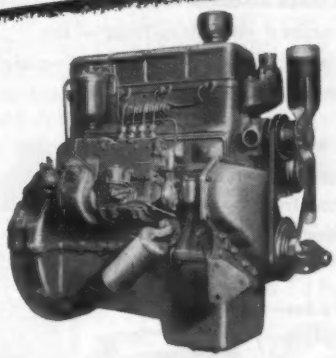
INDUSTRIAL ENGINES AND POWER UNITS

Looking for really *modern* diesel power? Here it is in one complete 4-cylinder, 220-cu. in., skid-mounted power unit.

Modern design throughout makes this Ford diesel outstanding in power and economy. It delivers more actual sustained power at the flywheel than ever before possible in engines of comparable displacement. Exceptionally rugged in construction, it is quality-built throughout for longer life.

Features such as replaceable cylinder sleeves, aluminum pistons and balanced crankshaft, for example, give you peak performance, longer engine life. Overhead-valve efficiency boosts economy, makes servicing easier.

Drop in and see your Ford Industrial Power Dealer for full information on this modern, super-efficient Ford diesel. Or write: Industrial Engine Department, Ford Division of Ford Motor Company, P.O. Box 598, Dearborn, Michigan.



ENGINE ASSEMBLY

WET CYLINDER SLEEVES
Replaceable cylinder sleeves are positively located, yet easily removable —eliminating costly reboring. Synthetic rubber seal ring at bottom of jacket.

FOUR-WAY INJECTOR
Precision made four-way injector disperses diesel fuel evenly into each cylinder for efficient combustion, more power, and greater fuel economy.

ROTATING EXHAUST VALVES
Exhaust valves are free-turn type, designed to rotate each time valve opens and closes. Makes for even wear, helps maintain compression longer.

12-VOLT ELECTRICAL SYSTEM
High-torque 12-volt starting motor provides faster cranking speeds and delivers extra power for quick starts even on the coldest mornings.

YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED!

Circle No. 171 on Reader Service Card for more information

LOOK AT THE VALUE IN

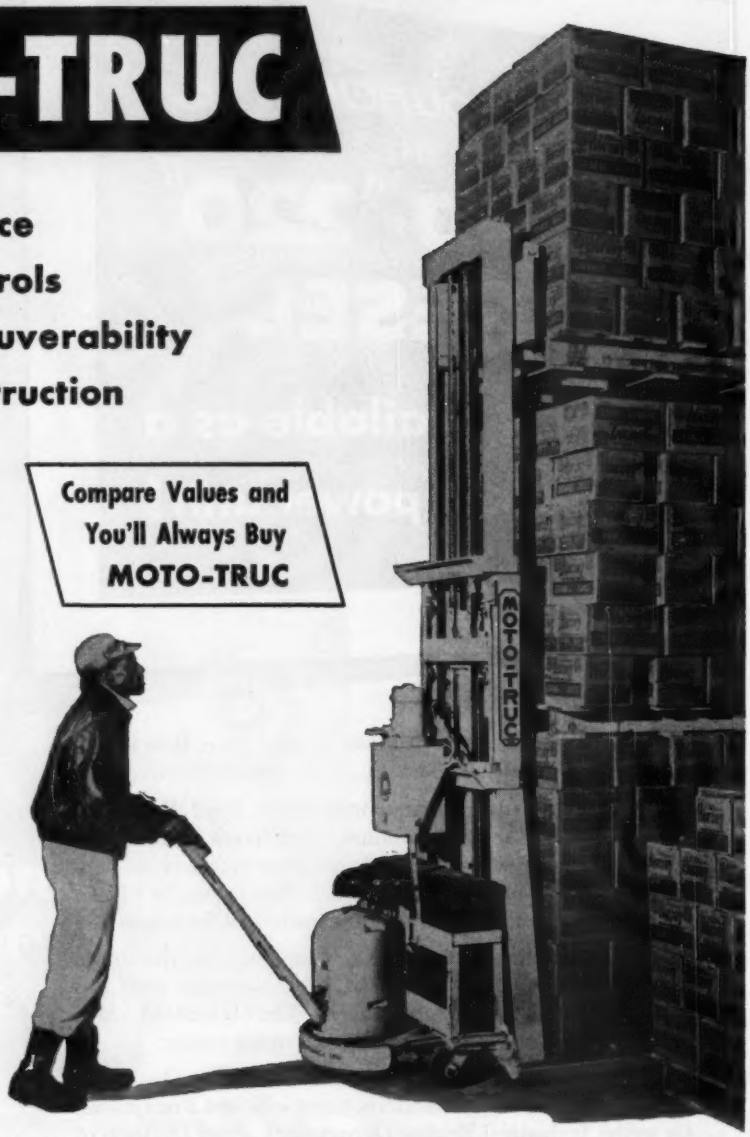
MOTO-TRUC

- Easy Maintenance
- Simplified Controls
- Greater Maneuverability
- Rugged Construction

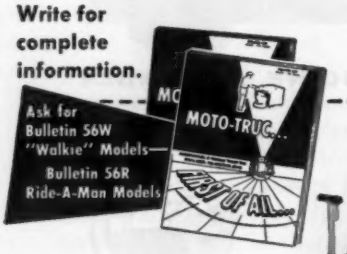
As builders of the original "walkie" type truck, Moto-Truc designers have a firm grasp on industry's exacting needs. A rugged, quickly serviced power unit . . . responsive, easy to operate controls . . . extremely heavy, all welded frame construction . . . outstanding load handling ability — all these essential features have been combined into Moto-Trucs — the smallest, most maneuverable "walkie" line available.

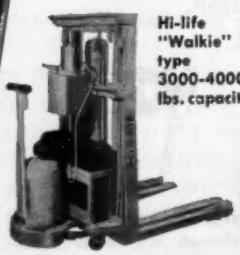
Be sure you're right before you buy. Investigate the complete line of Moto-Trucs — there is a model for every purpose.

Compare Values and You'll Always Buy MOTO-TRUC



Write for complete information.





Hi-life "Walkie" type 3000-4000 lbs. capacity

Pallet type "Walkie" truck 4000-6000 lbs. capacity

Platform "Walkie" type 4,000-10,000 lbs. capacity

Grip-All Tractor

Largest exclusive manufacturers of "Walkies" and Ride-A-Man Trucks

The MOTO-TRUC Co.

Representatives in Principal Cities

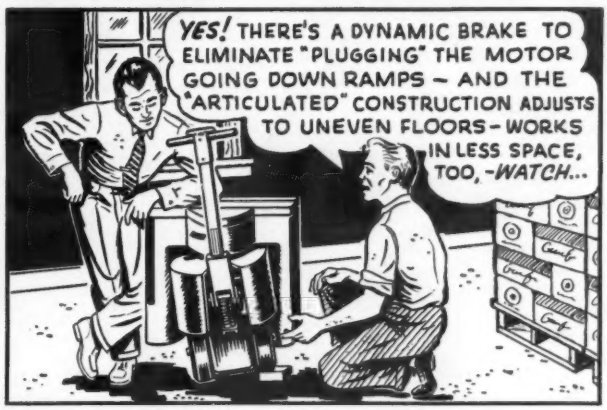
1955 E. 59th St. Cleveland 3, Ohio

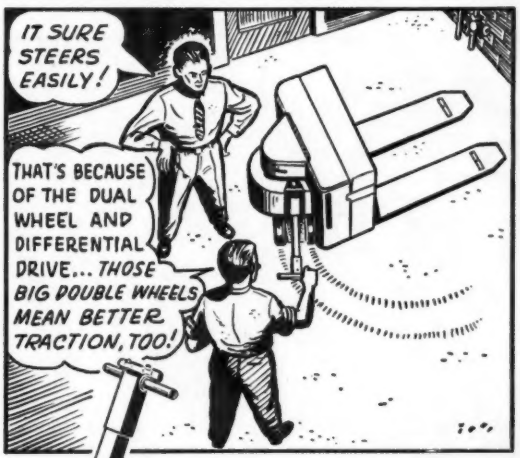
Pallet . . . Platform . . . Hi-Lift Truck

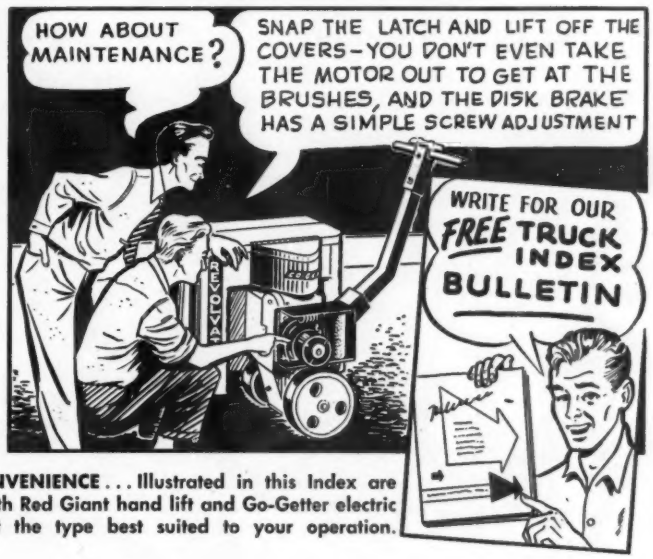
Circle No. 108 on Reader Service Card for more information

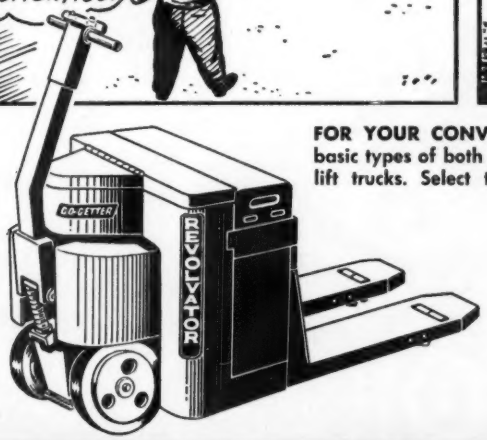
REVOLVATOR GO-GETTER®

The MOST COPIED LIFT TRUCK On The Market









FOR YOUR CONVENIENCE . . . Illustrated in this Index are basic types of both Red Giant hand lift and Go-Getter electric lift trucks. Select the type best suited to your operation.

Gentlemen:

Please send me without obligation, your Truck Index of over 600 combinations of sizes and capacities.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ **ZONE** _____

STATE _____

REVOLVATOR CO.

8715 TONNELE AVE., NORTH BERGEN, N. J.

Circle No. 126 on Reader Service Card for more information

B.F.Goodrich Tire

Use the right industrial tire with the right tread design and tread compound—save up to 50% on tire costs!

1 All-Purpose 2 Universal 3 Wheelbarrow Express 4 Ribbed (trailer) 5 Zero Pressure

1 At the Port of Portland dock, variable waterfront weather conditions and uneven work loads present a materials handling problem. All-Purpose Pneumatic industrial tires help maintain fast schedules. These tires are best for jobs where loads range from light, bulky items to big, heavy equipment. They reduce driver fatigue, virtually eliminate damage to traffic routes.

2 Truck cranes and straddle trucks moving heavy loads in factory yards usually operate more efficiently on Universal Pneumatic industrial tires. These tires give better traction in forward or reverse, and provide maximum load-carrying capacity and flotation.

Numbers indicate recommended type tire

Buyer's Guide

No matter how specialized your materials handling job, there's a B. F. Goodrich industrial tire to match your job requirements. This is possible because B. F. Goodrich makes a complete line of industrial tires in a wide range of types, sizes, tread designs and tread compounds.

Pictured below are several of the more commonly used types of B. F. Goodrich industrial tires. Each tire is numbered. Photographs with identical numbers show how these tires answer specific materials handling problems.

6 Smooth Tread

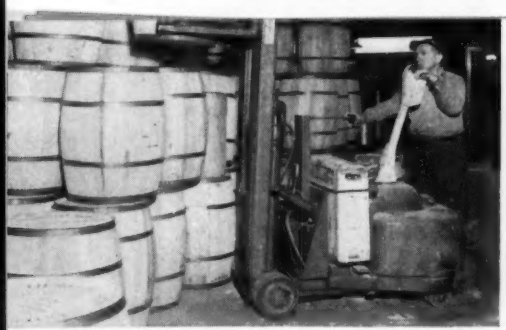
7 DeLuxe Cushion Traction Tread

8 Grooved Tread

9 DeLuxe Cushion Smooth

10 Flat Base Traction Tread

11 Vulcanized-on



10 **20% grades** in all kinds of weather with full loads present no problem for this truck. It's equipped with B. F. Goodrich Traction tires for extra pull.

11 **Maximum efficiency** often can be obtained by using a combination of two or more kinds of industrial tires. The truck pictured has a Pressed-On tire on the main drive wheel—Vulcanized-on tires on the other two wheels.

9 **Fast, quiet and cushioned!** These new electric sit-down trucks run quickly and quietly through the aisles of this big Food Fair warehouse. Smooth Tread DeLuxe Cushion Pressed-On tires help cushion fragile food loads.

Numbers indicate recommended type tire

1 **Greater stability** is a big feature of the new All-Purpose Pneumatic industrial tire. The tread is wide, with a continuous center rib and husky shoulders

Numbers indicate recommended type tire

3 **Easier hauling.** The B.F.Goodrich Wheelbarrow Express Pneumatic tire simplifies wheelbarrow jobs. Loads are easier to manage. Cushioning reduces strain and jarring. Flotation prevents bogging down in mud.

1 **All-weather traction.** Whether new All-Purpose tires are used indoors or outside, or a combination of these, they deliver traction that can't be beat. Many users refer to the All-Purpose as "the most versatile tire we've found."

Circle No. 7 on Reader Service Card for more information

Buyer's Guide

No matter how specialized your materials handling job, there's a B. F. Goodrich industrial tire to match your job requirements. This is possible because B.F.Goodrich makes a complete line of industrial tires in a wide range of types, sizes, tread designs and tread compounds.

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6 Smooth Tread

7 DeLuxe Cushion Traction Tread

8 Grooved Tread

9 DeLuxe Cushion Smooth

10 Flat Base Traction Tread

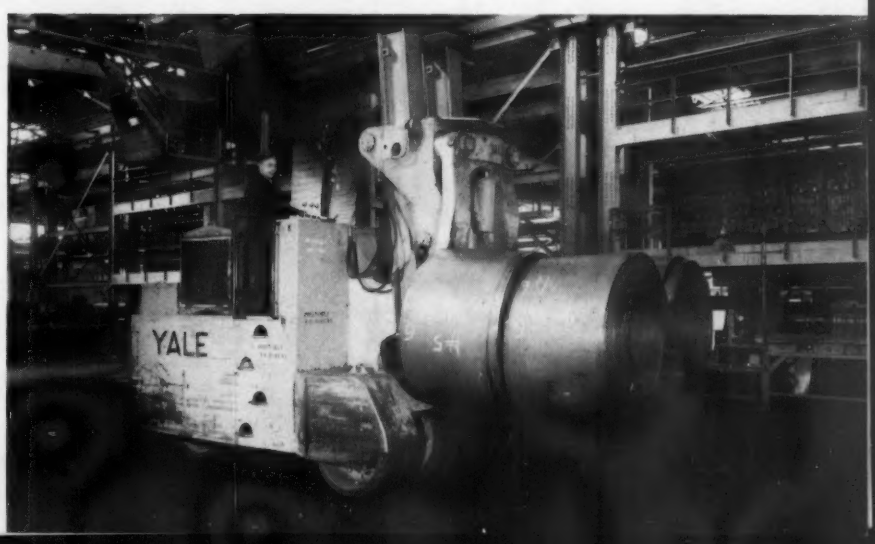
11 Vulcanized-on

6 **1,540,000 pounds of paper per day** is handled in the plant of the Philadelphia Bulletin by only six specially equipped trucks. Smooth Tread Pressed-On Solid tires with wide treads absorb shock, provide load protection, reduce floor wear, and lessen driver fatigue on this big job.

8 **Easier steering** is made possible because this huge truck is equipped with B. F. Goodrich Pressed-On tires with Grooved Tread. They will carry extremely heavy loads in severe service. The Universal compound resists cuts from abrasive scrap, too.

7 **Oily aluminum shavings** make Pressed-On tires with special oil and cut-resisting DeLuxe Cushion traction tread a necessity at this busy smelting plant. B. F. Goodrich offers a wide range of tread compounds and tread designs to meet special requirements.

Numbers indicate recommended type tire



1 Capacity for heavy loads is assured by the strong body, rugged shoulders and the versatile tread of the new B.F.Goodrich All-Purpose industrial pneumatic tire.

Numbers indicate recommended type tire

5 For small, light loads that must be moved short distances under favorable conditions, Zero Pressure tires provide extra cushioning and long, economical wear.

1 Traction on every surface. Indoors or outdoors, new All-Purpose Pneumatic tires provide outstanding traction. A heavy center rib around the tire assures long, even tread wear. Pneumatic cushioning protects loads, cuts down noise and reduces driver fatigue.

Buyer's Guide

No matter how specialized your materials handling job, there's a B. F. Goodrich industrial tire to match your job requirements. This is possible because B. F. Goodrich makes a complete line of industrial tires in a wide range of types, sizes, tread designs and tread compounds.

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8 Grooved Tread

9 DeLuxe Cushion Smooth

10 Flat Base Traction Tread

11 Vulcanized-on

FREE TW TIRE AND WHEEL ANALYSIS plan can save you up to 50% on industrial tire costs!

Making sure that you have the right industrial tires on your materials handling equipment can mean large savings in tire costs and maintenance expense. The best way to do this is to request a free B. F. Goodrich Tire and Wheel Analysis. The B. F. Goodrich TW Analysis man knows which industrial tire is best for your equipment and job requirements. His recommendations are unbiased because B. F. Goodrich makes a *complete* line of industrial tires. His suggestions have resulted in savings of up to 50% on tire costs and up to 20% on maintenance costs for many companies. Just mail the coupon. No obligation. A consulting service also is available to manufacturers of materials handling equipment.

Circle No. 7 on Reader Service Card for more information

B. F. Goodrich Tire Company
A Division of The B. F. Goodrich Company
Department TW-627, Akron 18, Ohio

I would like further information on your FREE TW Analysis.

NAME_____

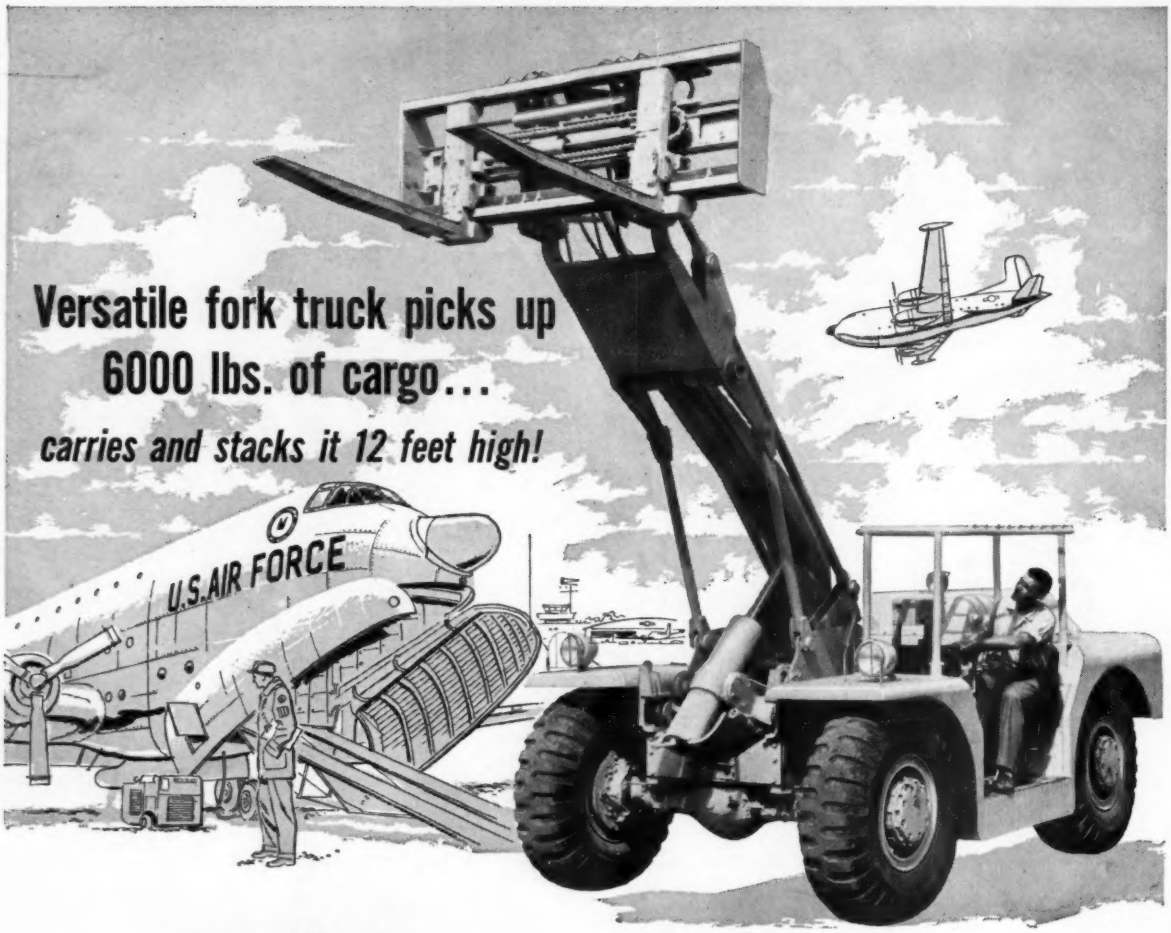
COMPANY_____

STREET_____

CITY_____ ZONE____ STATE_____

Specify B. F. Goodrich tires when ordering new equipment

B.F.Goodrich
FIRST IN RUBBER



TDA® Planetary-Drive Axles Help Fill "Tall Order" For Air Force

The Air Force asked for "almost everything" when it drew up performance standards for this heavy-duty fork truck. A parallelogram arm reaches up and out to pick up or deposit loads . . . yet folds so compactly the truck can enter aircraft. It can be driven at a speed of 20 mph either forward or backward. Designed to operate on rough terrain, it has two Timken-Detroit® planetary axles to give it 4-wheel drive for maximum performance, and 4-wheel steer for the greatest possible maneuverability.

Rugged, heavy-duty equipment like this calls for *planetary-drive axles.* So the manufacturer called on Timken-Detroit—world leader in this field. TDA engineers, handling everything from original drawings to finished components, not only met the manufacturer's specifications . . . they also saved valuable time, as well as development and manufacturing costs.

If you have a problem involving power transmission and propulsion, call in TDA's engineers. There's no cost . . . and you get expert advice from the specialists who have been building planetary-drive axles longer than any other manufacturer.

TIMKEN Detroit AXLES
TIMKEN-DETROIT AXLE DIVISION
ROCKWELL SPRING AND AXLE COMPANY
DETROIT 32, MICHIGAN
Accepted DTA Standard
TRADE MARK REGISTERED

Plants at: Detroit, Michigan • Oshkosh, Wisconsin • Utica, New York • Ashtabula, Kenton and Newark, Ohio • New Castle, Pennsylvania

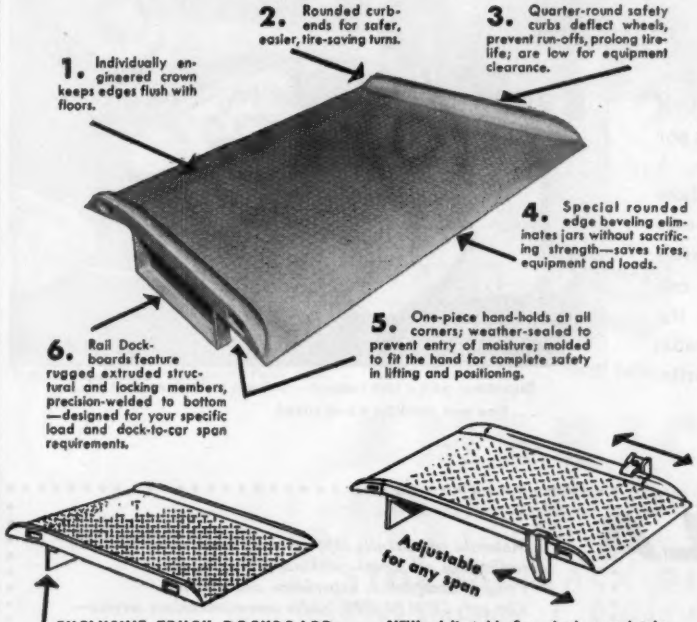
Circle No. 147 on Reader Service Card for more information

Truck loading

Rail loading

Magcoa Magnesium Dockboards mean faster, safer, low-cost loading and unloading

THERE *IS* A DIFFERENCE . . . Your first cost is your only cost. These Magcoa features assure fast, safe, efficient loading year after year.



EXCLUSIVE TRUCK DOCKBOARD FEATURE—Rugged magnesium angle lock fits snug and secure in the narrow gap which results when you back trucks against edge of dock and set brakes. No need to "jockey" trucks back and forth.

NEW—Adjustable Span-Locks completely eliminate board slippage even with widely-varying dock-to-carrier spans. Span-Locks permit use of a *single* Dockboard for double duty—*both* truck and rail.

Magcoa *magnesium* Dockboards are ¼ the weight of steel . . . can be positioned by one man, up-ended by one man. You don't need a fork truck or a gang of men to move a Magcoa Dockboard.

Every Magcoa Dockboard is designed to fit properly in actual loading operations—no need for a hammer and spikes to hold it in position. It is also designed with provision for maximum load weights, equipment underclearance, height-differential and dock dimensions. Thousands in use—many of them for more than 10 years.

A new folder helps you analyze your specific problem, shows which type of Dockboard or Ramp-Dockboard combination is best for your requirements. Use the coupon to get your free copy—no obligation.

MAGNESIUM COMPANY OF AMERICA

MATERIALS HANDLING DIV.
EAST CHICAGO 1, INDIANA

Representatives in principal cities

magcoa

Produced in Canada by Magcoa Limited, 277 Kipling Ave. South, Toronto 14, Ontario. Phone: Clifford 1-1311

☐ Please send Dock Analysis folder.

Name and Title_____

Company_____

Address_____

City-Zone-State_____

Circle No. 97 on Reader Service Card for more information

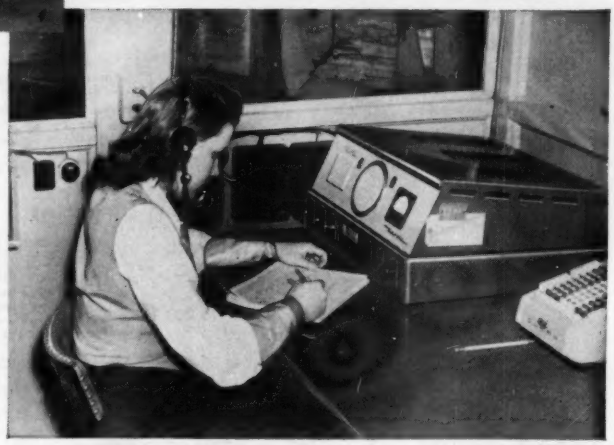
Cut "DEAD MILEAGE" off every truck!

Driver gets instructions for next pickup while he's finishing last one ... not a second wasted.

Check all these Motorola 2-way radio benefits

- A *Really SMOOTH* flow pattern ... each truck taking the next closest job, with no backtracking ... "dead mileage" cut to a minimum.
- More *Completed Jobs* per hour per truck ... a substantial saving in routine materials handling costs.
- Three trucks do the work of four ... you get greater work output without additional truck investment.
- Organized control, through more productive space management—*live* storage instead of dead storage.
- Greatly expanded handling capacity for peak load periods.
- Lower truck operating costs ... fuel ... maintenance.

In hundreds of plants, warehouses, yards and depots, Motorola 2-way radio has paid for itself in a few short *months*, by increasing output per truck and cutting costs a dozen ways. A Motorola Communications Engineer will show you, in dollars and cents, how Motorola 2-way radio will actually *save* you money, year after year. And he'll show you how Motorola can help do the job better ... why Motorola, the pioneer and leader, furnishes *more* 2-way radio than *all others combined*. Get the facts—write, phone, or wire—NOW.



Dispatcher gets a rush request—radios it to truck nearest job ... time and needless travel saved.

MOTOROLA

2-WAY RADIO

MOTOROLA COMMUNICATIONS & ELECTRONICS, INC.
A SUBSIDIARY OF MOTOROLA, INC.
[illegible] AUGUSTA BOULEVARD • CHICAGO 51, ILLINOIS

Motorola consistently supplies more mobile and portable radio than all others combined.
Proof of acceptance, experience and quality.
The only COMPLETE radio communications service—specialized engineering ... product ... customer service ... parts ... installation ... maintenance ... finance ... lease.
"The best costs you less—specify Motorola."

Circle No. 107 on Reader Service Card for more information

Good Warehousekeeping the *American* way

has proven the most efficient and economical handling of live storage

KNOW where every item in your stock is located, and have every item easily and quickly accessible. Protect stocks against damage. Speed and simplify inventory taking. American Racks are quality built — built to withstand rough, tough usage year in and year out, in any industry. You can't beat the "American" way for top efficiency and economy. Make us prove this fact. Distributors from coast to coast. Immediate service. Write us today.

ERECTED WITHOUT BOLTING OR WELDING

AN EXCLUSIVE AMERICAN FEATURE
Patent No. 2,654,487

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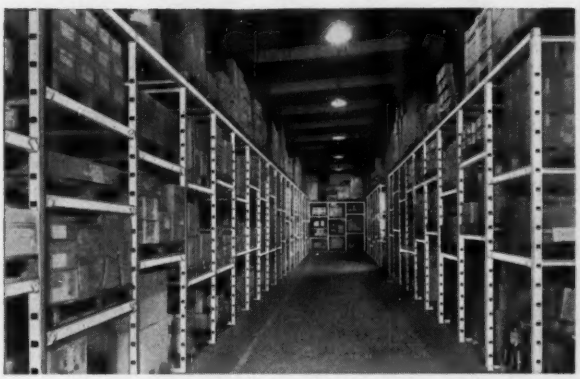
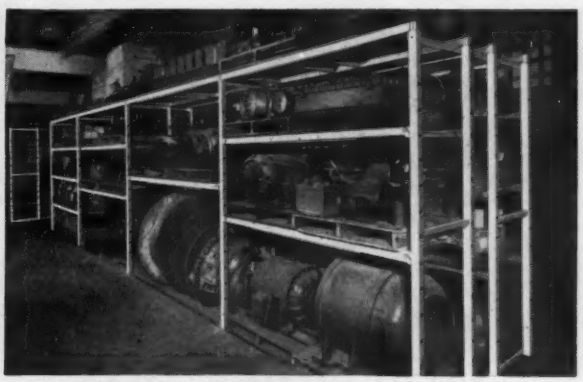
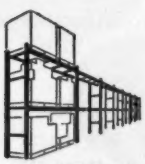


American Rack installation, Motorola, Incorporated.



American Rack installation, Socony-Vacuum Oil Company, Inc.

There's an AMERICAN STORAGE RACK for every storage need



Standard Pallet Racks

Adjustable Pallet Racks

Tool & Die Racks

Tiering Racks

Skid Racks

Drum & Barrel Racks

Coil Racks

AMERICAN METAL PRODUCTS CO.

STORAGE RACK DIVISION

5959 Linsdale • Detroit 4, Michigan

amp Plants and Subsidiaries: (American Metal Products Co.—Detroit, Mich.—Union City, Tenn.) (AllianceWare, Inc.—Alliance, Ohio—Kilgore, Texas—Colton, Calif.) (Borroughs Manufacturing Co.—Kalamazoo, Mich.) (General Spring Products, Ltd.—Kitchener, Ont., Canada) (Tube Reducing Corp.—Wallington, N. J.)

Manufacturers of quality products for automobiles, trucks, aircraft, offices, factories, warehouses, and homes.

Circle No. 165 on Reader Service Card for more information

NEWS VIEWS TRENDS

COMPLETES MERGER OF CASE AND AMERICAN TRACTOR

Final consolidation of American Tractor Corporation into J. I. Case Co. has been completed. At a recent board meeting held in Chicago, John T. Brown, chairman of the Case board, announced the election of Marc J. Rotjman, 39-year old former president of American Tractor, to the newly created position of executive vice president and general manager of J. I. Case. Rotjman will have authority over and responsibility for the overall operation of the newly merged company. In addition, he has been elected to the board of directors and will serve on the executive committee. Two other members of the former American Tractor board, Mentor Kraus of Ft. Wayne, Ind. and Edward Elliott of New York City, have also been elected to the Case board, which now comprises 15 members.

NEW DEPARTMENTS CREATED FOR GE MOTORS

General Electric has announced the formation of two new motor departments. The company's Medium Induction Motor Department is being divided into Medium A-C Motor and Generator Department, and Small A-C Motor and Generator Department. J. M. Crawford, vice president and general manager of the division, said the split was made necessary by the wide range of products made by the department. These motors ranged from 7½ to 5000 horsepower. General manager of the new Medium A-C department is O. F. Vea. Serving in the same capacity in the Small A-C department is Bryce W. Wyman.

PLANT ADDITION ANNOUNCED FOR HALLOWELL

The Standard Pressed Steel Co. is making a $1.4 million addition to the plant facilities of its Hallowell Steel Shop Equipment Division. Behind the plant addition, said Thomas Hallowell, Jr., SPS president, lies a steady growth in sales of the division's products, the development of new product lines, and the need for increased productivity to offset rising costs. He said the pressed steel division's present plant was out-moded by these factors, although it was brought up to date and expanded in 1951. The construction now in progress will add 80,000 square feet of factory space to the existing pressed steel shops at Jenkintown, Pa.

ACME MOVES LOCATION OF GENERAL OFFICES

Acme Steel Company has announced a new location for its general offices. To better serve its customers, the firm has moved from its former offices to a recently completed building, completing the consolidation of its administrative, manufacturing, sales, service and office facilities. The new address is: Acme Steel Company, 135th & Perry Avenue, Chicago 27, Illinois.

NEW TIMKEN LAB TO COST 1½ MILLION

A modern 1½ million dollar building, containing approximately 20,000 square feet, will be erected across from the main offices of The Timken Roller Bearing Company in Canton, Ohio. The building will house the firm's physical, railroad research, electronic, photographic and lubrication laboratories. Included in its facilities will be a 700 horsepower transmission and axle dynamometer, cold test room, hot test room, six radial and thrust test machines, and a new universal testing machine.

L-S ELECTRICS FOR LIFT TRUCK SAVINGS

Imagine!

only 53¢ a day to run an L-S model J!

At National Cold Storage Company, Brooklyn . . . a fleet of 12 L-S Model "J" Electrics helps move up to 1 million pounds of freight daily . . . makes use of every valuable cubic foot of refrigerated space — *yet costs only 53¢ per truck a day to operate and maintain*!*

The Model "J" is clean, silent, fumeless to operate. Ideal for indoor work, this rugged, compact L-S Electric weighs only 4100 lbs. . . . works safely *inside* elevators . . . easily clears 6'0" doorways . . . gives stable high lifts in 7' aisles. Moreover, it right-angle stacks 2000 lb. 48" long loads in areas impossible for bulkier gas-powered trucks.

Exclusive 'lubricated-for-life' design, and no under truck adjustments keep downtime and maintenance costs to the minimum. Year after year, Lewis-Shepard Electrics (like the Model "J" above) cost *far less* . . . outperform and outlast by far comparable gas trucks. Write for complete facts. Use the coupon below.

**Average cost for operating and maintenance, including battery charging*

Here are cost figures from typical satisfied L-S users:

- West Coast Cannery, operating 14 trucks, report average cost of $135 a year for L-S Electrics, as against $525 a year for gas trucks. During a 10-year period, complete operational costs of Lewis-Shepard electrics is ¼ that of gas-driven trucks.
- East Coast Refrigerated Warehouse, working 9 trucks in refrigerator rooms at zero to 5° above, reports a part replacement cost of only $62.49 a year for all 9 trucks.
- Large Southern carrier operates L-S Electrics at $8.18 per month, per truck on a 3-shift-per-day basis, every day!

L-S **LEWIS-SHEPARD®**
The most complete line of materials handling equipment anywhere
The "MASTER" Line

133 Walnut St., Watertown 72, Mass.

Please send: ☐ *L-S Model "J" Catalog 33*
☐ *Gas vs. Electric Cost Comparison*

Name.....
Company.....
Address.....
City..... **State**.....

Circle No. 92 on Reader Service Card for more information

Continued

YALE ACQUIRES CONTRACTORS MACHINERY CO.

The Yale & Towne Manufacturing Company has entered into an agreement to acquire the net assets and business of the Contractors Machinery Company, Inc., manufacturers of the Trojan line of construction and road building equipment. The corporation being acquired will become the Contractors Machinery Division of Yale & Towne. Its manufacturing and sales operations will continue at their present headquarters in Batavia, N. Y., with the same network of sales representatives. Robert G. Allen, president of Contractors Machinery Co., will become general manager of the new Yale & Towne Division. The Trojan line includes 4-wheel and 2-wheel drive self-propelled front-end bucket loaders, patrol graders, sheep's foot tamping rollers and snow plows.

BARBER-GREENE ANNOUNCES NEW PLANT EXPANSIONS

Two significant plant expansion projects have been announced by Barber-Greene Company. A new 150,000 square foot manufacturing facility is now under construction in DeKalb, Illinois, and it is anticipated that it will be in full operation by fall of 1957. Simultaneously, the subsidiary plant of Barber-Greene Canada, Ltd., in Toronto, Ontario, is being expanded by the addition of some 43,000 square feet of shop space and a new two-story office building.

WAYNE EXPANDS PRODUCTION, OFFICE FACILITIES

Completion of a 30,000 square foot plant addition, providing increased production and office space, has been announced by Wayne Manufacturing Company. Gil M. Wayne, executive vice president, said that the $130,000 addition includes a new 25,000 square foot production area, as well as additional office facilities.

BUILDS MOLDED FIBER GLASS RESEARCH CENTER

Completion of a new building to house research and engineering facilities for the five affiliated Molded Fiber Glass Companies is announced by R. S. Morrison, founder of the companies. Located in Ashtabula, Ohio, the 6000 square foot structure was built for the Molded Fiber Glass Research Company, jointly owned and supported by the five affiliated firms. It is designed as a centralized laboratory for research and testing, working on raw materials, processes and finished products in the field of fiberglass reinforced polyester resin.

CATERPILLAR LAUNCHES PLANS FOR EXPANSION

Plans to build a 500,000 square foot Industrial Engine Plant have been announced by H. S. Eberhard, president of Caterpillar Tractor Co. The Peoria, Illinois firm also announced its intention to construct a multi-building Research Center and a General Office Building. All three facilities will be located on an 1,100 acre site 12 miles north of downtown Peoria. When the general offices now located at the present site of the firm are moved to the new area, manufacturing and other facilities will expand to take over the vacated space.

STEEL STRAPPING COMPANIES MERGE

The merger of Renois Tying Machines, Inc. with the A. J. Gerrard & Company was recently announced by J. M. Gerrard, president of the acquiring corporation. Wire tying operations of the Renois Division will be continued at the present location.

Save $1000 per year on every Industrial Truck you use

You might even save more. Plenty of users of *electric* industrial trucks are doing so right now. These are realistic, average savings based on all kinds of operating conditions. If your present industrial trucks aren't electric, the chances may be that you are throwing away thousands of dollars every year.

This is something that doesn't appear on the surface. Because electric industrial trucks generally have a higher price tag—like most quality merchandise. But the real cost of any industrial trucks doesn't stop when you buy them. Over the life of a truck, the operating costs might even exceed the price.

Electric industrial trucks save in the three most important areas of cost breakdown: depreciation, fuel and repair. They generally outlast other trucks from two to four times. Instead of fuel, you buy electric power—from your local electric company at low rates that have been steadily declining for years. Since the electric drive system runs cool and has so few moving parts, maintenance and repair costs alone average several hundred dollars per year less. And heavy duty batteries last for years without replacement.

In addition to their tremendous economies, electric industrial trucks offer the advantages of quiet, vibration-free operation; and virtual freedom from unscheduled downtime.

These are important considerations for up-to-date management men today. Have a talk with your nearby industrial truck dealer or salesman. He's listed in your classified telephone directory under "Trucks—industrial."

This message is presented as a service to industry by Exide Industrial Division, The Electric Storage Battery Company, Phila. 2, Pa.

THE ELECTRIC STORAGE BATTERY COMPANY Exide®

Circle No. 48 on Reader Service Card for more information

CONCRETE PRODUCTS: The Automatic TRANSPORTER above is one of three platform models which work indoors and out, day and night, in all kinds of weather including rain, snow and ice for the *Permacrete Products Corp.*, makers of precast concrete products.

Automatic® TRANSPORTER

LEADS ITS FIELD IN COMPACTNESS... EFFICIENCY...ECONOMY

Automatic TRANSPORTERS are available in many different types...low and high lift platform...low and high lift pallet...fork, straddle, and retractable mast type stackers...tractors. These short, compact trucks perform all the handling functions of standard rider-type trucks, yet cost is considerably lower.

Completely new streamlined design reduces aisle space requirements and facilitates maneuvering in tight quarters. In all models, the flexibility, economy and dependability of electric power at its best are combined with many exclusive operating advances developed by Automatic engineering. Capacities range from 1,000 to 10,000 lbs., depending upon the model. A complete line of attachments is available.

But compare...see for yourself the outstanding superiority of Automatic TRANSPORTERS.

Figures below are for low lift pallet model comparison but other TRANSPORTERS show equally impressive advantages.

	CAPACITY	TRANSPORTER 6,000 LBS.	TRUCK A 6,000 LBS.	TRUCK B 6,000 LBS.	TRUCK C 6,000 LBS.	TRUCK D 6,000 LBS.
SHORTER	Overall length less load	21½″	25⅞″	26⅜″	23¾″	24″
MANEUVERABLE	Maximum Overall width	29″	32″	32″	27″	32¼″
BETTER INCHING CONTROL	3-speed Travel Control	Yes	No	No	No	No
MAXIMUM MOTOR HEAT PROTECTION	Class H Silicone insulated motor	Yes	No	No	No	No
MORE EFFICIENT	Hand or foot lowering control	Both	Hand Only	Hand Only	Hand Only	Hand Only

PHARMACEUTICALS & CHEMICALS: The above pallet model TRANSPORTER and other Automatic trucks help move many tons of products per month at the warehouse of Chas. Pfizer & Co., Inc., 107 year-old drug and chemical firm.

FOOD SPECIALTIES: Pallet model TRANSPORTER shown here hauling sugar from receiving dock to storage is part of an Automatic "team" which, last year, enabled Jules Weber, Inc., of New York to increase capacity of storage area by 69% without new construction.

TAGS & LABELS: This high lift fork model TRANSPORTER is used by Central Tag Co., to handle and tier 800 lb. paper rolls in storage, also to deliver them to the presses.

VALVES & METERS: Marked improvement resulted in handling finished parts when this TRANSPORTER went to work for Rockwell Mfg. Co. The TRANSPORTER carries parts successively from finishing through inspection and weighing to final assembly.

SEND FOR SPECIFICATIONS & CASE HISTORIES

Send today for complete information including case histories of installations similar to your own where TRANSPORTERS are cutting materials handling costs to a minimum. Also get the facts about Automatic's exclusive lease or purchase plan. Example: A low-lift platform Transporter can be leased from 24c* per hour average, complete with battery and charger.

**Based on 60 months lease term, 20 eight-hour working days per month.*

Automatic

Dept. C-7, 141 West 87th St.
Chicago 20, Ill.

WORLD'S LARGEST EXCLUSIVE BUILDER OF ELECTRIC-DRIVEN INDUSTRIAL TRUCKS

Write today for TRANSPORTER DATA

Complete data on Automatic TRANSPORTERS is yours for the asking. Also case histories of installations similar to yours and facts about lease or purchase plan. Just attach this coupon to your company letterhead and sign your name. Address AUTOMATIC...Dept. C-7, 141 West 87th Street, Chicago 20, Illinois.

Circle No. 13 on Reader Service Card

ASSOCIATION and SOCIETY NEWS

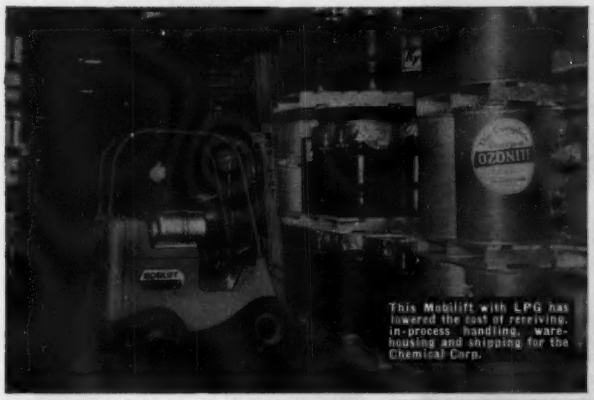
J. B. Webb

• **The American Society of Mechanical Engineers** has appointed Jervis B. Webb as chairman of its Material Handling Division. Webb, president of Jervis B. Webb Company, has previously served two terms as secretary, and has been a member of the ASME executive committee. He is also a member of the Engineering Society of Detroit, and the American Material Handling Society.

• **The Material Handling Institute, Inc.** has named **Harold T. Amrine** as 1957 chairman of the College-Industry Committee on Material Handling Education. Amrine is Head of the Department of Industrial Engineering at Purdue University. The College-Industry Committee is part of the Institute's program of assisting with the development of material handling education programs at the college level and in extension courses. Committee activities include development of visual aids, course outlines and coordination of research projects.

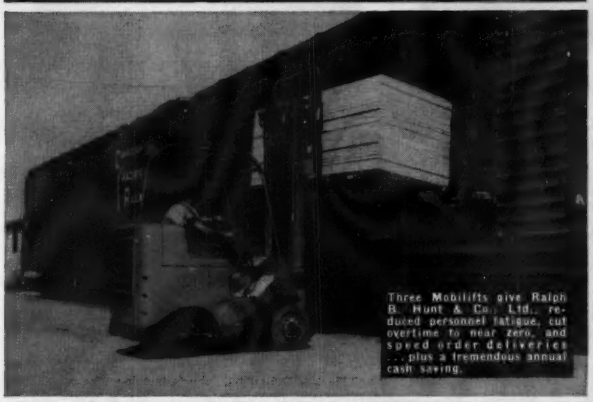
• **Over one-third of the exhibit space** in the National Industrial Packaging and Handling Exposition for 1957 has already been reserved, according to John W. McReynolds, president of the Society of Industrial Packaging and Material Handling Engineers. The exposition will be held in Atlantic City Convention Hall, October 28 through 31. As in

these MOBILIFT owners lift profits, lower costs

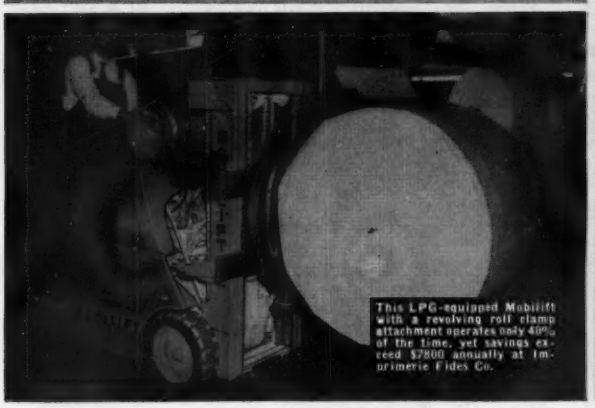


This Mobilift with LPG has lowered the cost of receiving, in-process handling, warehousing and shipping for the Chemical Corp.

One Mobilift handles all warehousing plus order selecting for over 200 stores served by Voss Grocery Co.


Three Mobilifts give Ralph B. Hunt & Co., Ltd., reduced personnel fatigue, cut overtime to near zero, and speed order deliveries . . . plus a tremendous annual cash saving.

This 2000 lb. capacity Mobilift—one of 5 at Tidewater-Cleveland Storage Corp.—easily pushes a 9000 lb. load to storage, saves four trips.


This LPG-equipped Mobilift with a revolving roll clamp attachment operates only 40% of the time, yet savings exceed $7800 annually at Imprimerie Fides Co.

Hubbard & Co. specified Mobilifts because they operate in less space . . . move more tonnage at lower cost in its plant and warehouse.

In company after company, industry after industry, Mobilift owners tell us they are the *only* industrial trucks which slash handling costs by:

1. Lowering operating costs
2. Cutting maintenance costs
3. Moving more tonnage per hour per dollar

Here are some of the reasons why: *Mobil-Matic* Drive* is the simplest, easiest-to-maintain automatic transmission on the market. *Finger-Tip Controls* provide a new standard of easy handling in the industrial truck field. *Hydra-Lizer** on "Sit-Downs", exclusive hydraulic equalizing rear suspension system automatically cross-compensates for floor variations up to 3". *Fluid Coupling* on "Sit-Downs", gives the smoothest, cushioned starts and stops of any truck. Mobilifts are available with factory-installed LPG equipment, and time-saving attachments for specialized operations. "Stand-Up" models up to 3500 lb. capacities; "Sit-Down" models up to 5000 lb. capacities.

Free! Valuable Information

- **How Mobilifts' exclusive features save dollars by increasing efficiency is described in this "Sit-Down" folder.**
- **This brochure describes the cost-saving features of the only "Stand-Up" line of gas-operated trucks on the market.**

***Trade Mark**

LAMSON MOBILIFT® CORP 23 Lamson Street, Syracuse 1, New York

Mobilift Sales and Service is Available in 75 Cities Throughout the U. S. and Canada

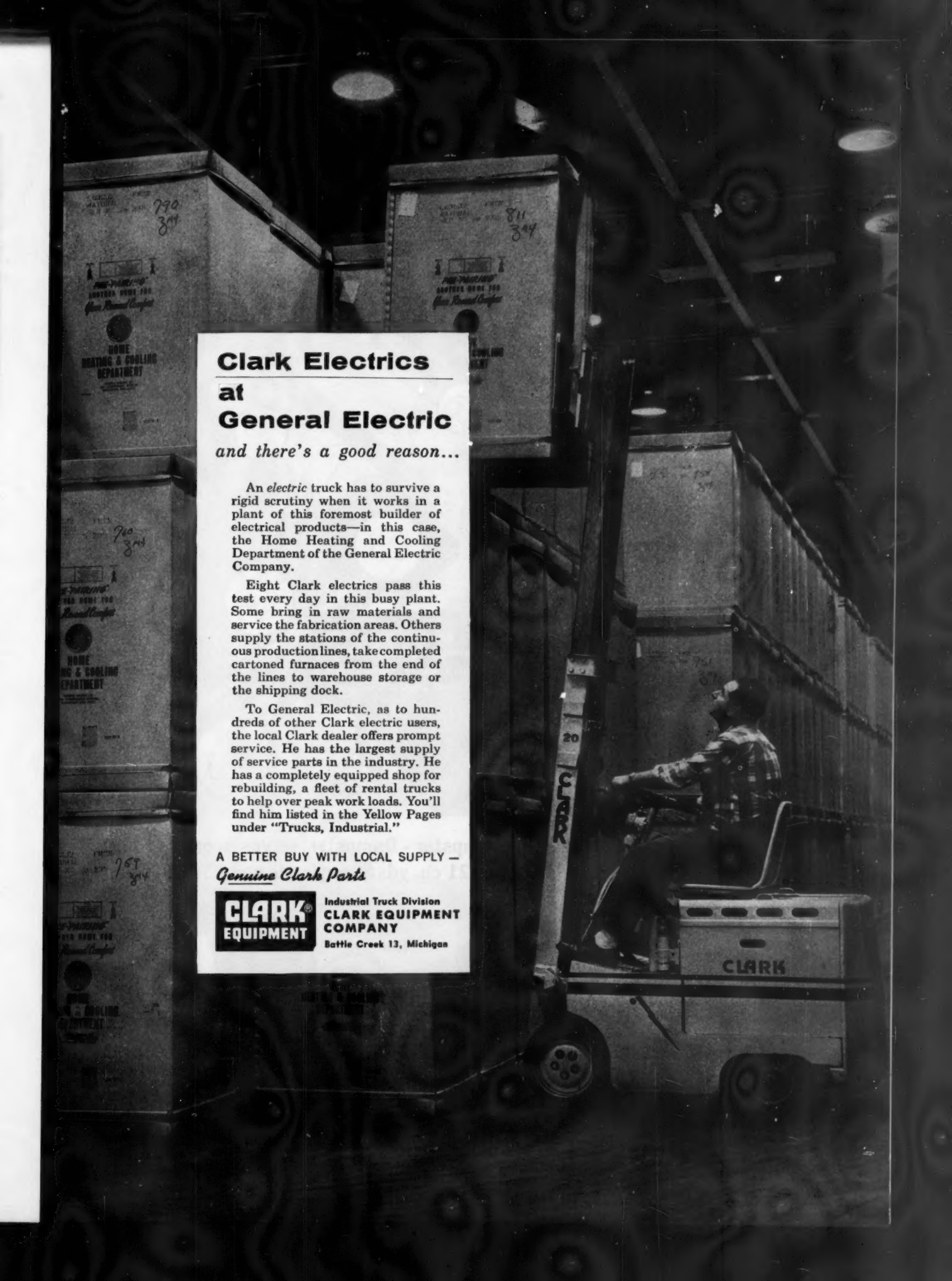
Circle No. 89 on Reader Service Card for more information

past years, it will include the SIPMHE Short Course, which this year will be co-sponsored by Temple University. An additional feature will be the

Shown discussing plans for the 1957 SIPMHE exposition are, left to right are L. West Shea, vice president of Hanson & Shea, Inc., show management; C. J. Carney, Jr., managing director of the Society; Thomas L. Nichols of Hanson & Shea; and Robert T. Scott, public relations director for the show.

12th National Competition in Industrial Packaging and Material Handling. Entries in the competition will be prominently displayed in the middle of the exhibit area, to insure that they are called to the attention of visitors. The exposition will place special emphasis on industrial packaging, package handling, transportation, and the relation of all three to distribution systems.

• **The 12th Annual Management Engineering Conference,** sponsored jointly by the Society for Advancement of Management and the Management Division of the American Society of Mechanical Engineers, will be held Thursday and Friday, April 25 and 26, at the Hotel Statler, New York City. The program will feature sixteen nationally recognized authorities, who will explain how many leading companies are successfully meeting competition through involved methods of operations research, work measurement, wage incentives, quality control, material handling, integrated data processing, and management of industrial engineering.



Clark Electrics at General Electric

and there's a good reason...

An *electric* truck has to survive a rigid scrutiny when it works in a plant of this foremost builder of electrical products—in this case, the Home Heating and Cooling Department of the General Electric Company.

Eight Clark electrics pass this test every day in this busy plant. Some bring in raw materials and service the fabrication areas. Others supply the stations of the continuous production lines, take completed cartoned furnaces from the end of the lines to warehouse storage or the shipping dock.

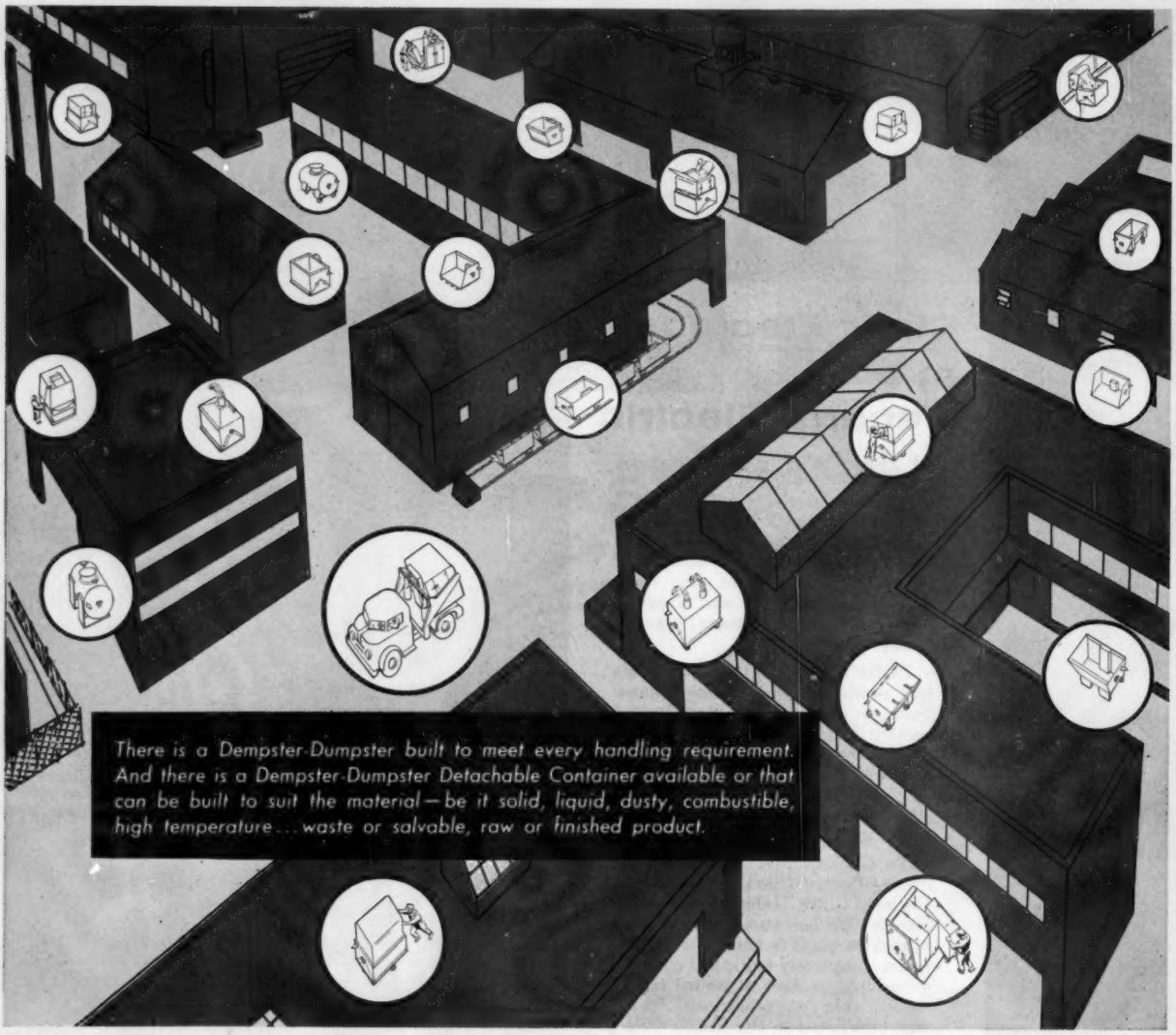
To General Electric, as to hundreds of other Clark electric users, the local Clark dealer offers prompt service. He has the largest supply of service parts in the industry. He has a completely equipped shop for rebuilding, a fleet of rental trucks to help over peak work loads. You'll find him listed in the Yellow Pages under "Trucks, Industrial."

A BETTER BUY WITH LOCAL SUPPLY —
Genuine Clark Parts

CLARK® EQUIPMENT

Industrial Truck Division
CLARK EQUIPMENT COMPANY
Battle Creek 13, Michigan

Who else wants to reduce materials

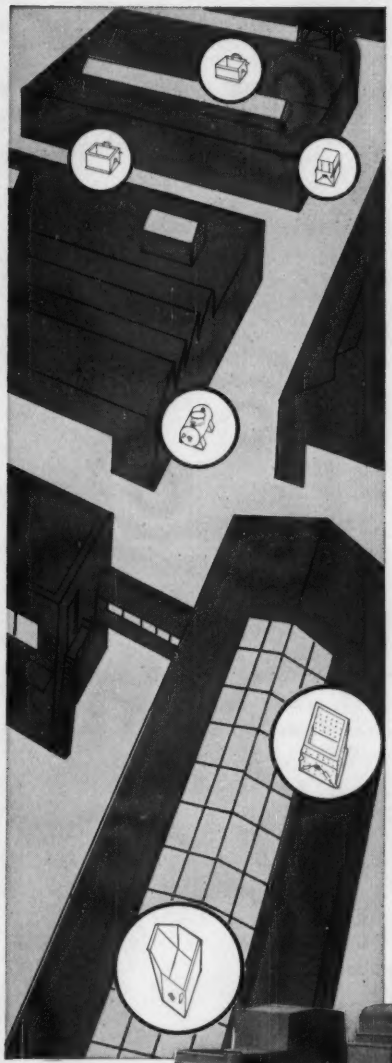


There is a Dempster-Dumpster built to meet every handling requirement. And there is a Dempster-Dumpster Detachable Container available or that can be built to suit the material—be it solid, liquid, dusty, combustible, high temperature... waste or salvable, raw or finished product.

With only one man, the driver, one Dempster - Dumpster serves scores of big detachable steel containers -- sizes 2 to 21 cu. yds... payloads up to 36,000 lbs!

SERVING COST-MINDED MANAGEMENT ALL OVER THE WORLD

handling cost 60% to 80% ? . . .



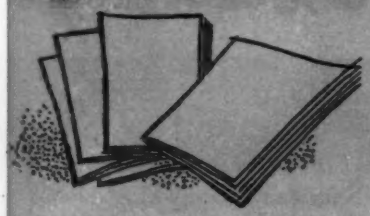
A FACT-FINDING SURVEY made by one of our engineers in cooperation with officials at one relatively small plant revealed labor cost of that firm's then-present-method was $6,552.00 annually. Labor cost would be $1,160.00 with the Dempster-Dumpster System — a saving of $5,392.00 annually (82 cents out of each $1.00). Investment in our equipment would amount to $10,000.00. In less than two years the equipment would pay for itself from its own savings produced for the user.

Results of a survey at a larger plant revealed annual labor cost amounted to $64,119.00, and would be $23,304.00 with the Dempster-Dumpster System — a saving of $40,815.00 (63 cents out of each $1.00). On an equipment investment of $40,968.00, the system would pay for itself in one year. In 5 years it would save this company over $200,000.00!

How much can this equipment save you? We recommend a fact-finding survey. No obligation, of course. It is the best way we have found to help you determine what can be expected of this system in your own particular operation. Or, perhaps you would prefer to first receive complete literature, free on request. May we hear from you? *Dempster Brothers, Inc.*

One Truck-Mounted
Dempster-Dumpster Handles Scores
of Containers... All Designs... All Sizes

DEMPSTER BROTHERS, 637 Shea Building, Knoxville 17, Tenn.



CATALOGS

offered in

101 Cost-Cutting Ways . . . is the title of a booklet offered by Coles Cranes, Inc. It describes their cranes which lift, lower and carry with boom in any position throughout a 360° arc. Available in LP-Gas, Diesel or Gasoline-Electric powered models.

Circle 31 on Reader Service Card

Truck Leveler . . . hydraulic jacks raise or lower trailer or truck to dock level for fast loading and unloading. May be installed easily in pavement in front of loading dock. Capacity to 40,000 lbs. Information is available from Rotary Lift Co.

Circle 128 on Reader Service Card

Hand Lift and Electric Truck Index . . . describes over 600 combinations of sizes and capacities and is offered you by the Revolvator Co.

Circle 126 on Reader Service Card

Marking Attachments . . . the compact Rolacoder machine marks one, two or four sides of cartons, cases, drums, bags, etc.—and all automatically. A new bulletin describing the machine is offered you by Adolph Gottscho, Inc.

Circle 65 on Reader Service Card

How 35 Manufacturers Saved . . . with USS Cyclone Processing Belts is the title of a booklet which gives case histories of manufacturers handling steel, foodstuffs, felt hats, china, etc. It's yours for the asking from Cyclone Fence Dept., American Steel & Wire Div., U. S. Steel Corp.

Circle 38 on Reader Service Card

Lift Jacks and Skids . . . together with plastic, rubber and metal wheels are discussed in literature offered you by Ironbound Box & Lumber Co.

Circle 85 on Reader Service Card

Conveyors . . . wheel and roller gravity—live roller and power belt conveyors are discussed in literature offered you by Metzgar Conveyor Co. Also included are descriptions of the company's switches, accessories and reel dollies.

Circle 105 on Reader Service Card

Casters . . . designed for any application requiring light weight, high capacity, and low overall height are discussed in literature available from Albion Industries, Inc. These casters are recommended for furniture, food containers, dollies, portable cabinets, etc.

Circle 2 on Reader Service Card

Electric Hoists . . . in capacities from 500 to 2000 lbs. are the subject of a catalog published by the Wright Hoist Div., American Chain & Cable Co., Inc. One of the applications for which this hoist is particularly well suited is said to be the gentle positioning of production work.

Circle 6 on Reader Service Card

How to Streamline Your Shipment Addressing for Speed and Economy . . . is the title of a booklet offered by Weber Marking Systems Div. of Weber Addressing Machine Co., Inc. Some of the subjects treated are how to evaluate the efficiency of your shipment addressing operation, modern systems for addressing labels and tags, latest direct-to-carton stenciling systems and integrated and shipment addressing.

Circle 156 on Reader Service Card

Powerized Hand Truck . . . a catalog is offered which shows the various models and their features. It's available from Lift Trucks, Inc.

Circle 93 on Reader Service Card

One-Man Car Door Opener . . . opens any box car door in 20 seconds or less with little effort. Multiplies one man's strength a hundred-fold. Details are available from The Nolan Co.

Circle 113 on Reader Service Card

Bins . . . the right combination for your production, storage or handling problems will be found in the latest brochure published by Bathey Mfg. Co.

Circle 16 on Reader Service Card

Dock Shelters . . . protect workers while loading and unloading during inclement weather. Also protect merchandise. Eliminate accidents and loss of traction due to wet and slippery conditions. Full information is available from Dazzo Products Co.

Circle 41 on Reader Service Card

Time and Motion Studies . . . now prove you can cut warehousing costs with Live Storage using fork trucks and conveyors. Full information is available from The Rapids-Standard Co., Inc.

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3	28	53	78	103	128	153	178	203	228	253	278	303	328	353	378	403	428	453	478
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25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500

and BULLETINS

advertisements in this publication

If You Have a Problem . . . involving power transmission and propulsion, then you'll be interested in literature on the subject available from Timken-Detroit Axle Div., Rockwell Spring and Axle Co.

Circle 147 on Reader Service Card

Small Parts Assembly Feeder . . . to find out how the Nes-Tier Model 'M' feeder will cut your assembly costs, The Chas. Wm. Doepke Mfg. Co., Inc. is offering a bulletin giving full details.

Circle 45 on Reader Service Card

Industrial Truck Batteries . . . information on their industrial truck batteries is offered you by Gould-National Batteries, Inc.

Circle 66 on Reader Service Card

Cranes & Hoists . . . standard models in a wide range of styles, sizes and capacities are discussed in a catalog offered you by The Euclid Crane & Hoist Co.

Circle 51 on Reader Service Card

Self-Dumping Hoppers . . . are said to cut handling and unloading costs of wet or dry, hot or cold bulky materials 50% or more. Full details are contained in literature available from Roura Iron Works, Inc.

Circle 129 on Reader Service Card

Steel Shelving . . . and steel shop equipment is described in literature available from Neiman Steel Equipment Co., Inc.

Circle 111 on Reader Service Card

Convert Hand Pushed Cranes and Hoists . . . to power traveled units by using the Trojan Tractor. Bulletin 833 gives you all the necessary information and is offered by Detroit Hoist & Machine Co.

Circle 43 on Reader Service Card

Tractor-Shovel . . . users report it takes only two to three hours to unload a boxcar of bulk materials using TL-6 and a conveyor setup. This unit features a scooping action with tip-back bucket and it's not necessary to ram to get the load. Full details are contained in a catalog from Tractomotive Corp.

Circle 151 on Reader Service Card

Adjustable Power Belt Conveyor . . . has a moveable conveyor boom that can be adjusted to any length within its minimum and maximum lengths. This provides a "live" link between plant conveyors and trucks. Full information on their Expand-O-Veyor is available from the A. B. Farquhar Div., The Oliver Corp.

Circle 53 on Reader Service Card

Casters and Wheels . . . in their new catalog, hundreds of styles and sizes are described, including swivel and rigid casters of forged steel, plate steel, semi-steel, etc. Single and double wheel models. The catalog is available from The Hamilton Caster & Mfg. Co.

Circle 67 on Reader Service Card

Hand Lift Truck . . . made in sizes to handle single or double-faced pallets with loads up to 6,000 lbs. Forks enter and lea
the pallet easily. Will lift wherev
a man can stand. A catalog givi
full information is available fr
The American Pulley Co.

Circle 10 on Reader Service Ca

Chain Drives . . . for drivi
conveying and timing are discuss
in a catalog offered you by C
lman Wheel Co. Their drives a
said to deliver more for less—sa
space, increase your equipment c
pacity and absorb shock loads.

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Work Positioner . . . u
izes an efficient calibrated spri
mechanism which automatica
positions material at the requir
work level. Eliminates liftin
bending or stooping—reduc
worker fatigue. Full details a
available from American Machi
& Foundry Co., Lowerator D

Circle 8 on Reader Service Ca

Walkie-Type Trucks . .
which offer such features as el
tric-hydraulic lift, simple contro
ball bearings turntable, and doub
wheel support are described in
catalog available from The Mo
Truc Co.

Circle 108 on Reader Service Ca

Drop Bottom Containers .
for coke handling—cubical capa
ity up to 325 cubic feet and lo
capacity up to 11,375 poun
Containers are easily loaded a
unloaded, substantially reduci
the number of man hours requir
by other methods. Full inform
tion is available from The Youn
town Steel Door Co.

Circle 162 on Reader Service Ca

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PLEASE SEND ME ADDITIONAL INFORMATION AND LITERATURE ON ITEMS CIRCLED BELOW.

1	26	51	76	101	126	151	176	201	226	251	276	301	326	351	376	401	426	451	476
2	27	52	77	102	127	152	177	202	227	252	277	302	327	352	377	402	427	452	477
3	28	53	78	103	128	153	178	203	228	253	278	303	328	353	378	403	428	453	478
4	29	54	79	104	129	154	179	204	229	254	279	304	329	354	379	404	429	454	479
5	30	55	80	105	130	155	180	205	230	255	280	305	330	355	380	405	430	455	480
6	31	56	81	106	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481
7	32	57	82	107	132	157	182	207	232	257	282	307	332	357	382	407	432	457	482
8	33	58	83	108	133	158	183	208	233	258	283	308	333	358	383	408	433	458	483
9	34	59	84	109	134	159	184	209	234	259	284	309	334	359	384	409	434	459	484
10	35	60	85	110	135	160	185	210	235	260	285	310	335	360	385	410	435	460	485
11	36	61	86	111	136	161	186	211	236	261	286	311	336	361	386	411	436	461	486
12	37	62	87	112	137	162	187	212	237	262	287	312	337	362	387	412	437	462	487
13	38	63	88	113	138	163	188	213	238	263	288	313	338	363	388	413	438	463	488
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19	44	69	94	119	144	169	194	219	244	269	294	319	344	369	394	419	444	469	494
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21	46	71	96	121	146	171	196	221	246	271	296	321	346	371	396	421	446	471	496
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23	48	73	98	123	148	173	198	223	248	273	298	323	348	373	398	423	448	473	498
24	49	74	99	124	149	174	199	224	249	274	299	324	349	374	399	424	449	474	499
25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500

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CATALOGS AND BULLETINS

Continued

Addressing Multiple Shipments . . . can be done as a by-product of office procedure. You can prepare Sten-C-Labls at the same time as your invoice, order or bill of lading. Eliminates errors, mis-shipments and repetitive writing. A brochure giving full details is available from Sten-C-Labl, Inc.

Circle 143 on Reader Service Card

Dock Covers . . . completely enclose the space between car and building doorways, protecting loading and unloading during bad weather. Loss of heat and refrigeration is eliminated. Literature is available from CAPCO.

Circle 23 on Reader Service Card

Trolley Conveyor . . . new design chain—lower first cost—longer life—never weakened by flexing and will not twist or stretch. These are some of the features of the T-Series trolley conveyors which are discussed in literature available from Chain-O-Flex Corp.

Circle 40 on Reader Service Card

Industrial Floor Machines . . . avoid the usual time-wasting delays on floor cleaning jobs and are said to usually save from 30% to 60% in labor costs alone. Does the work of a 3 to 12-man crew. Literature is available from G. H. Tennant Co.

Circle 144 on Reader Service Card

Bag Closing Machine . . . for making low cost tape-bound closures on large multiwall paper bags is the subject of a catalog offered by Union Special Machine Co. Machine is quickly adjustable to any bag height.

Circle 153 on Reader Service Card

Sheet Steel Racks . . . for handling heavy loads of sheet steel of any width, length and thickness. The racks tier one upon the other to any height, using automatic tongs suspended from an overhead crane. Literature is available from Palmer-Shile Co.

Circle 115 on Reader Service Card

How to Cut Dead Mileage Off Every Truck . . . in hundreds of plants, warehouses, yards and depots, Motorola 2-way radio had paid for itself in a few short months. To tell you how this can be done in your plant operations, write for free information to Motorola, Inc.

Circle 107 on Reader Service Card

Twice the Power of Ordinary Walkies . . . by using four 6-volt auto batteries rather than a single 12-volt industrial battery, the Raymond Walkie gives dual voltage. Also offers three separate speeds, forward and reverse and safety control. A bulletin is available from The Raymond Corp.

Circle 123 on Reader Service Card

Battery Breakage . . . in electric industrial trucks is now virtually eliminated in the new C & D batteries with Hi-Impac cell cover and container. Further information is contained in literature offered you by C & D Batteries, Inc.

Circle 22 on Reader Service Card

Magnesium Truck Ramp . . . of all welded construction—heavy side and center trusses—safety side rails and curb ends and full range locking device is fully detailed in data available from Penco Engineering Co.

Circle 116 on Reader Service Card

Fork Trucks . . . which are said to lower operating costs, cut maintenance costs and permits you to move more tonnage per hour, per dollar are discussed in literature available from Lamson Mobilift Corp.

Circle 89 on Reader Service Card

Conveyor . . . if you're looking for a conveyor to cut your costs in handling heavy materials and parts—or parts to and from heat treating operations, the Pan-Link may be your answer. A bulletin describing this new conveyor is offered you by Hapman Conveyors, Inc.

Circle 68 on Reader Service Card

LPG-Electric Power Unit . . . is said to combine full electric power *with no fatigue* and the economy and low maintenance of LP-Gas in one compact new power unit. Installation is quick and easy on any make of electric hand truck with adequate sized power compartment. Full information is available from Ready-Power Co.

Circle 124 on Reader Service Card

Close Attention to Quality . . . is said to be one of the reasons why Bucyrus-Erie cranes should have a key role in your material handling program. Information is available from Bucyrus-Erie Co.

Circle 20 on Reader Service Card

The Blue Book of Packaging . . . is the title of a 36-page illustrated catalog which gives descriptions, facts and figures on all USS Gerrard Steel Strapping and related equipment. It is published by the Gerrard Steel Strapping Div., U. S. Steel Corp.

Circle 59 on Reader Service Card

CATALOGS

Continued

Bulk Delivery Equipment . . . a catalog is offered by Baughman Mfg. Co., Inc. which gives illustrated descriptions of bulk bodies for practically every kind of product. Contains money-saving, new ways to load, convey, unload or dump by belt, screw, bucket and other mechanical means.

Circle 17 on Reader Service Card

Overhead Traveling Cranes . . . their many design and operating advantages are described in detail in a bulletin published by Abell-Howe Co. It also explains the company's competent service from original survey to final installation.

Circle 1 on Reader Service Card

Hand Stamp Stencil Duplicator . . . eliminates preparing labels and pasting them on containers; prints direct on carton. Data from Multistamp Co. available to you on request.

Circle 109 on Reader Service Card

Gas Powered Fork Truck . . . available in many models, with capacities to 6000 lbs.—features low initial cost, high lift, speed and economy. Further information is available from The Baker-Raulang Co.

Circle 15 on Reader Service Card

Racks . . . for pallets, skids, drums, barrels, coils—tool and die racks, etc. which are erected without bolting or welding are described fully in a catalog available from American Metal Products Co.

Circle 165 on Reader Service Card

Small Parts Boxes . . . which are said to save labor and space and eliminate loss and damage to parts are described in literature available from All American Steel Products Div. of All American Radiator Cover Co.

Circle 3 on Reader Service Card

CATALOGS

Continued

Continuous Power Conveyors . . . the R-W "Zig-Zag" Conveyor provides real automation for cost-saving operating and increased production, according to information available from Richards-Wilcox Mfg. Co.

Circle 130 on Reader Service Card

All-Metal Rotary Bins . . . for broken package lots and large quantities of small items are fully detailed in a catalog available from Frick-Gallagher Mfg. Co.

Circle 58 on Reader Service Card

Magnesium Ramps . . . for truck and car loading offer such features as minimum weight with maximum strength, safety tread surface, positive locking device, and side guards to prevent run-off or tire damage. An illustrated brochure is offered you by Bronco Products Co.

Circle 166 on Reader Service Card

Weight Indicator . . . with the Dillon weight indicator, loads can be checked on the spot the instant they are lifted. Accuracy is guaranteed to be within one division or less at any point on the dial. Portable—weather-proof—dust-proof. Descriptive literature is offered you by W. C. Dillon & Co., Inc.

Circle 44 on Reader Service Card

Overhead Conveyor Systems . . . are described in an illustrated catalog or Planning Folder, offered you by Chainveyor Corp.

Circle 24 on Reader Service Card

Unloads 60 Tons . . . in less than 100 trips. This is the report by one user of the Michigan Tractor Shovel who encountered an unusually difficult unloading job. Unloads regular cars in under 80 trips. Full details are available from Construction Machinery Div., Clark Equipment Co.

Circle 25 on Reader Service Card

CATALOGS

Continued

Conveyors . . . the May-Fran conveyor standardization program provides the standard components that can be assembled to form a special or standard conveyor. Components can be re-arranged at any time to solve production problems in the future. The complete story is contained in literature available from May-Fran Engineering, Inc.

Circle 102 on Reader Service Card

Increased Production 40% . . . is the report of one user of a gravity roller conveyor system by Standard Conveyor Co. Bulletin A-3 is offered by the company and gives full details on its complete line.

Circle 138 on Reader Service Card

Hoist . . . has a motor rating of 30 min., 55 degrees C., giving ample reserve for accidental overloads. Other features are oversize ball bearings, precision ground shafts and sealed-in lubrication. Full details are available from Robbins & Myers, Inc.

Circle 173 on Reader Service Card

Self-Dumping Hopper . . . returns to loading position and automatically locks after emptying. Tires are hard rubber and rear wheels are castered. Capacity is ½ cubic yard. Details are contained in a bulletin by Salem-Brosius, Inc.

Circle 132 on Reader Service Card

Conveyor Facts . . . is the title of a bulletin describing live roller, gravity, continuous trolley, reciprocating vertical conveyors, etc. and is available to you from Lamson Corp.

Circle 88 on Reader Service Card

Steel Strapping Machine . . . air power tensions the strapping then a quick stroke of the handle seals the strap and cuts it off the coil. The machine is lightweight and portable. Delivers any preset tension you want up to 1600 pounds. Full details are available from Signode Steel Strapping Co.

Circle 135 on Reader Service Card

Casters and Wheels . . . are described in an engineering manual on their complete line and is yours for the asking from Saginaw Products Corp.

Circle 131 on Reader Service Card

Magnesium Dock Boards . . . are said to safely speed loading operations and save valuable man hours. They offer such advantages as tire-saver safety curbs —triple strength curb ends—beveled edges—positive, adjustable drop lock, etc. Bulletin DB-204 gives full details and is yours on request from Magline Inc.

Circle 96 on Reader Service Card

Power and Gravity Conveyors . . . are discussed in literature available from Harry J. Ferguson Co.

Circle 56 on Reader Service Card

Ratchet Hoist . . . the 'Tugit' hoist can be used to assemble parts, close freight car doors, stretch cable, pull pipes together, move machinery, and a thousand and one other jobs you might find for it. Bulletin 388 gives full details and is offered you by Manning, Maxwell & Moore, Inc.

Circle 99 on Reader Service Card

Marking Tools for Every Need . . . dies, stamps, printers, tags, stencils, embossers, etc. are all described in detail in data available from Jas. H. Matthews & Co.

Circle 101 on Reader Service Card

Truck Weighs as it Lifts . . . here's a low-cost scale that can be put on any hydraulic fork lift to assure a full, safe load. Prevents floor overloads and can be used to total stock. Details are available from Martin-Decker Corp.

Circle 169 on Reader Service Card

Industrial Tires . . . built with a tread of five broad riding ribs that compress into sharp-edged "teeth," the Super Rib is said to assure faster nonskid starts, safer nonskid stops and greater stability for safer stacking. Full details are offered you by the Goodyear Tire & Rubber Co.

Circle 64 on Reader Service Card

MEN in the NEWS

At **Allis Chalmers Manufacturing Company** . . . new general manager of the **Buda Division, Tractor Group,** is **L. C. Daniels.** He succeeds **R. K. Mangan,** president and general manager, Buda Division, who retired January 1, 1957. Daniels joined the Buda Company as vice president in

L. C. Daniels

O. J. Higgins

1950. **Owen J. Higgins** is general manager of the Harvey, Illinois Works, where the Buda Division's material handling equipment and engine and generator sets are manufactured. Higgins had been assistant general works manager of the Tractor Group prior to this promotion.

At **American Machine & Foundry Company . . . John C. Dabney** has been appointed director of marketing, according to **Morehead Patterson,** board chairman and president. In his new position, Dabney will advise AMF business units and groups on all phases of marketing including customer relations, market research, product planning, advertising and sales promotion, sales policies, product service, visual aids, and marketing management. Prior to this appointment, he had been director of industrial development for the State of Florida. Before that he had been director of marketing for Harris-Seybold Co.

J. C. Dabney

At **Lewis-Shepard Products, Inc.** . . . the appointment of **G. Lincoln Ryther** as sales promotion manager has been announced. Ryther succeeds **Fred L. Hoffman,** who has been promoted to the newly created post of administrative engineer. He was formerly an advertising agency executive, and is currently vice president of the National Industrial Advertisers' Association.

At **Hyster Company . . . Lynn Chapman** has been named to the position of supervising methods engineer at the Danville, Ill. factory, according to **Paul Fischer,** Hyster chief methods engineer. Chapman has been with Hyster for 21 years, the past eight of which he has served in the Portland plant methods engineering department. In addition to supervising the methods program at the Danville factory, which manufactures lift trucks and attachments, he will assist in planning the various methods and engineering procedures for the company's new plant to be constructed there.

At **Greer Hydraulics, Inc.** . . . the company has announced the election of **Laurent Oppenheim, Jr.** as a member of the board of directors. Oppenheim is an industrial management and financial relations consultant, and is also a director of Resistoflex Corporation.

At **National Starch Products, Inc.** . . . a newly elected member of the board of directors is **William A. Mitchell.** The announcement was made by **Frank Greenwall,** president. Mitchell is a director of the Federal Reserve Bank in Cincinnati, The Cincinnati Gas & Electric Co., Baldwin Piano Co., Lindsay Wire Weaving Co. and the Associated Dry Goods Co. He is a member of the advisory board of Lord & Taylor. In addition, he is also a trusted and a member of the Executive Committee of the United States Council of the International Chamber of Commerce.

W. A. Mitchell

At **Feedrail Corporation** . . . new officers have been elected for the company. They are: **Albert F. Stoll,** chairman of the board; **Frank L. Novak,** president; **Alexander Hammond,** vice president and treasurer; and **J. A. Heinzelman,** secretary.

3-WAY PROOF

MERCURY IS BETTER IN THE BASIC FEATURES THAT COUNT

On the job, Mercury's superior construction means new economy to the plants that own them, better performance to the men who drive them. Let us *prove* to *you* that Mercury is made better, works better—at less cost to you.

THERE'S A MERCURY FORK TRUCK SUITED TO YOUR NEEDS

Models in 2000 to 8000 lb. Capacity

Ask For Free Appraisal. See Phone Book for Mercury Representative or Return Coupon for Free Literature.

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Name_____

Company_____

Address_____

City_____ Zone____ State_____

Circle No. 170 on Reader Service Card for more information

MEN IN THE NEWS

Continued

At **Goodyear Tire & Rubber Company** . . . four major promotions have been announced by **R. B. Warren,** who himself will step up to the post of general manager of the Industrial Products Division. **O. A. Schilling** becomes sales manager of the division. **H. R. Comstock** is the new assistant sales manager. **R. E. Chapman** is manager of the Central Division. And **R. E. Mercer** becomes manager of hose sales. The chain-action reorganization followed the recent election of **Sam DuPree,** former general manager of the division, to vice president of the firm.

At **Otis Elevator Company** . . . **Donald Shannon** has been named manager of the newly created public relations department, according to **Emmett W. Hines,** vice president and general zone manager. Shannon had been advertising manager of the company since 1951. He is succeeded in that post by **G. Howard Gotthardt,** who had formerly been in charge of sales promotion activities and exhibits.

At **Abell-Howe Company** . . . **Warren J. Haeger** has just been promoted to the position of product manager of the construction division.

At **The Jeffrey Mfg. Co.** . . . **A. Howard Smith** has been appointed manager of commercial research for the firm. Previous to joining Jeffrey, Smith had been director of the business research department for Robbins & Myers, Inc.

At **Unistrut Products Company** . . . three managers have been appointed to newly created divisions. **George McKay** is manager of the new electrical and mechanical construction

NOW...ON BANTAM SELF PROPELLED

a "dual purpose" 15-ft. boom

works inside
—with low gooseneck boom

works outside
—with straight boom

cuts time and costs on all jobs!

The BANTAM Self-Propelled is now more versatile and profitable than ever. With this specially designed, dual-purpose 15-ft. boom you can work both inside and out. All you do is add a wedge insert which gives a 25° gooseneck offset for inside jobs where space and headroom are limited.

Then, for fast, cost-cutting, outside lifting, loading, stacking or other handling jobs, the wedge is removed. Presto—you've got the regular, high-lift straight boom. One man makes the change in minutes. Either way, you get the same big 6-ton lifting capacity.

Wherever you're working—in-plant handling and maintenance or at outside yard assignments—you've got the same one-man, one-engine, all-purpose machine with exceptional maneuverability . . . independent travel with no-shift forward and reverse . . . 360° swing . . . power up and power controlled lowering for precise, safe handling. And it works and earns with BANTAM's full line of digging and handling attachments.

Get an on-the-job demonstration right now; see your BANTAM distributor.

SCHIELD Bantam Co.

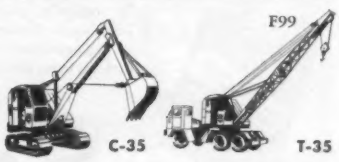
251 Park Street, Waverly, Iowa, U.S.A.

WORLD'S LARGEST PRODUCER OF TRUCK CRANES AND EXCAVATORS

I want information on BANTAM CR-35 with new gooseneck boom.

☐ Also details on carrier mounted BANTAM.

☐ On crawler mounted BANTAM.



Name_____

Position_____

Company_____

Address_____

City_____ State_____

Circle No. 133 on Reader Service Card for more information

MEN IN THE NEWS

Continued

division. **C. T. Walas** heads the new material handling division. **F. W. Ingraham** now manages the newly created partitions and display division. In addition, **A. E. Serewicz** has been appointed sales supervisor of Unistrut activities in Canada.

At **The Baker-Raulang Company . . . Ralphe B. Vawter** has been named to the newly-created post of manager of industrial relations. Vawter had previously been with the Lewis Welding and Engineering Company.

At **The Dow Chemical Company . . . Tyrone Gillespie,** assistant to the president, has been given added responsibilities as coordinator of overseas activities. Gillespie will maintain contact with Dow research, technical service and development, manufacturing, sales and other segments of the company in coordinating their relationships with individuals, companies and governments abroad.

At **Borg-Warner Corp. . . . J. F. Weiffenbach** has been appointed director of research and engineering. Weiffenbach had been active in various phases of industrial management for the past 23 years, mostly in the Chicago area. During this span he has been responsible at different times for executive functions in the fields of engineering, manufacturing and product development.

At **Crown Zellerbach Corp. . . .** the board of directors has elected two new officers of the company. **George S. Runyan** becomes vice president for general paper sales, and **David J. Benjamin** becomes vice president in charge of the Western-Waxide Specialty Packaging Division.

WATCH THIS TRACTOR BECOME A FLEET

...and your material handling problems become a breeze

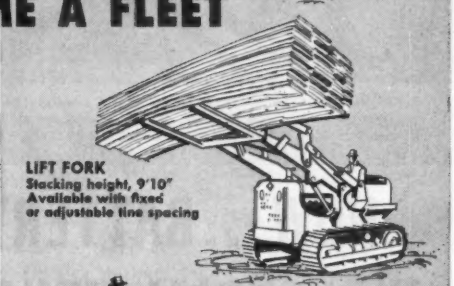
With an Allis-Chalmers HD-6G tractor shovel, you simply remove and replace four pins to change from a bulk loader to a lift fork, crane, bulldozer or ditcher. The switch takes two men less than 15 minutes, yet each new attachment can save many hours of hard labor.

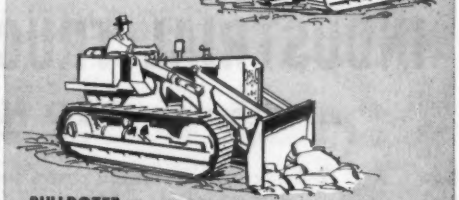
With its standard 1½-yd bucket, you can stockpile, reclaim and load bulk materials of all kinds. Or you can double your speed in coal, coke, cinders and snow with a big 2¼-yd light materials bucket.

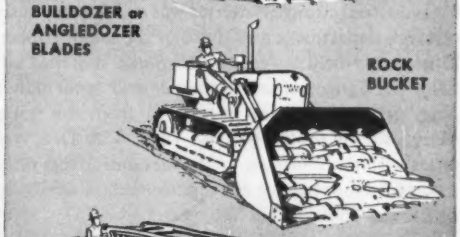
Then, by changing from one attachment to another, you handle packaged and palletized loads, move heavy machinery, level yard storage areas, maintain plant roads, landscape, dig trenches for pipe and foundation footings, handle countless other jobs—all on one basic equipment investment.

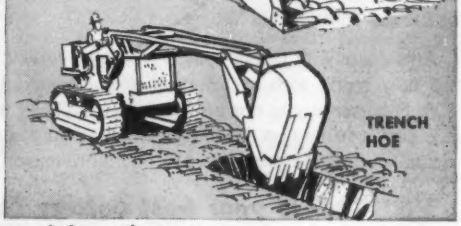
Ask your Allis-Chalmers dealer to show you how its unmatched versatility can streamline many jobs in and around the plant. Write for free literature.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN









ALLIS-CHALMERS

Circle No. 4 on Reader Service Card for more information

See the difference! The battery cell on the left with a container and cover made of present standard materials has been struck with a four-pound maul. Notice the smashing and cracking. C & D's Slyver-Clad cell, with the container and cover made of new, exclusive C & D *Hi-Impac* compound was struck the same way—without a sign of breakage! Imagine the damage to truck batteries prevented, and the resulting time and money saved on repairs with batteries made of C & D's new *Hi-Impac* material.

NOW...BATTERY BREAKAGE IN ELECTRIC INDUSTRIAL TRUCKS VIRTUALLY ELIMINATED

...with new C&D *Hi-Impac* cell cover and container!

New C & D *Hi-Impac* material for cell covers and containers for industrial storage batteries was developed jointly by C & D's research department and those of the major rubber companies. Thoroughly field tested, the *Hi-Impac* material virtually eliminates the danger of cell container and cover damage by dropping, collision between trucks, or from the impact of heavy objects falling on the battery. Thus, C & D *Slyver-Clad*® batteries with the *Hi-Impac* containers and covers practically never have to be shopped for cell replacement or repair due to cracked or broken containers and covers.

All sizes of C & D's famous, Five-Fold *Slyver-Clad* batteries are now made with exclusive *Hi-Impac* material. Now with C & D batteries you not only get extra-capacity in a standard size tray; you also get *Hi-Impac* cell covers and containers that virtually eliminate breakage. It's one more reason why—

For details and specifications on C & D *Slyver-Clad* batteries with *Hi-Impac* cell covers and containers for electric industrial trucks and motorized lift trucks, write for Bulletins IT-524/56 and IT-525/56.

C&D

BATTERIES, INC.

of Conshohocken, Pa.

SINCE 1906

SALES AND SERVICE OFFICES IN PRINCIPAL CITIES FROM COAST TO COAST

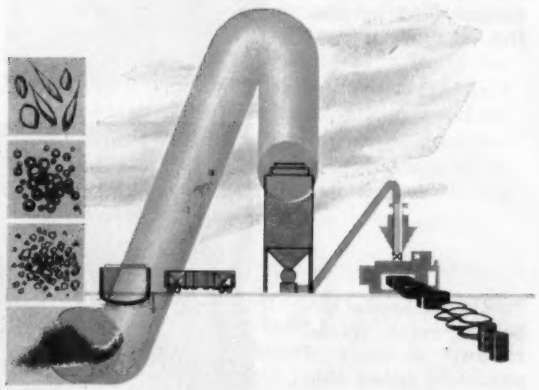
C&D is your best battery buy!

Circle No. 22 on Reader Service Card for more information

REMOTE control of systems readily obtained. Panel here regulates melt reclaiming at Piel Bros.

A FLOW STUDY SHOWS THAT INCREASING NUMBERS OF BULK MATERIALS ARE BEING MOVED PNEUMATICALLY AND DISCUSSES ADVANTAGES WHICH ARE PROVIDED TO PROCESSES AND PERSONNEL THROUGH . . .

Conveying by Air



APPLICATIONS of pneumatic bulk handling systems are increasing as rapidly as research and development increase the list of materials they can handle.

Pneumatic conveyors are now handling materials as fine as minus 400 mesh and as coarse as 1½ inches in diameter. They're moving bone-dry dust and moderately hygroscopic salts. (Not in a same system, of course.) Quantities may range from a few pounds to many tons per hour.

Advantages of air-activated conveyors have been recognized for many, many years—pneumatic dust removal goes back as far as 1866—but since these basic advantages have direct bearing upon modern requirements they are briefly summarized.

Materials are kept under close control—there is no dust from handling them and virtually no loss.

Dangers to personnel and machines from corrosive or harmful substances are eliminated.

Air-conveyors are self-cleaning.

Sanitary standards are easily maintained.

Hazards from moving parts do not exist—what power equipment is required can be completely enclosed.

Systems have great flexibility—materials can be conveyed wherever tubing can be run, and it can be kept out of working areas and bent around building obstructions or other restrictions to straight-line flow.

(More on next page)

Operations require minimum manpower and frequently move materials at very high speeds—in unloading boxcars, for example, a pneumatic conveyor will clean up a car in one-third or one-fourth the time required by more conventional methods, and demand as little as one-sixth the manpower.

Switches are easy to arrange for routing materials to different areas for storage or feeding to operations.

Wearing sections such as elbows are easily replaced.

Factors which so far tend to limit the application of pneumatic conveyors are:

Relatively high power requirements per hour per ton of bulk moved.

Lengths that materials can be economically moved —as compared to "long-distance" types of bulk conveyors—are limited.

Materials which rapidly absorb moisture, or those which lump, cake, or pack, are not readily handled by air.

Precise control of rate of flow is difficult without auxiliary equipment such as feeders and feeder-scales.

Some materials which might ordinarily appear to be suitable for pneumatic handling have characteristics which, in operations, make them unsuitable. Some prove to be too highly abrasive at conveying speeds. Others gum up or pack at nozzles and elbows. And there are materials which can be spoiled by the turbulance of handling by air.

It can be said that, in general, pneumatic systems can handle most fine, dry, free-flowing materials. A partial, typical list of those which have been handled is shown. For materials with which they have not had experience, manufacturers of this type of equipment prefer to make tests before submitting a recommendation for a system.

There are vacuum and pressure systems, both in variable capacities depending upon the requirements for the job. And there are combinations of both. The manufacturer must determine the type of system required after he knows the nature of the material, the capacities desired, conveying distances involved, and any other conditions peculiar to the operation.

High pressure systems convey heavy materials and provide rapid movement of materials which are not endangered by turbulance. Low pressure systems suffice for materials which are very fine and relatively light and many that become "fluid" when aerated.

To prevent fine materials from leaking into the plant or atmosphere, some systems employ filters and others use completely closed circuits. Closed circuit systems also handle explosive powders, using inert gas as a conveying medium.

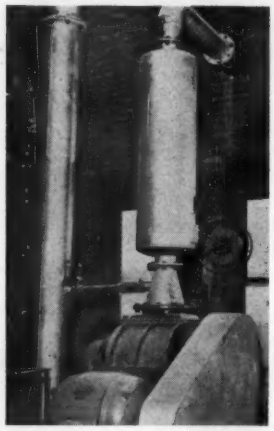
Since empirical data is the best source of information on this subject, examples of typical installations are the best means of visualizing potentials in pneumatic handling.

A Three-Way Objective

Improved handling, sanitation and quality control were prime requisites in revising the material handling set-up in a brewery modernizing program. Piel Bros., having taken over the former Rubson & Horrman

EASILY REPLACED wearing sections help in handling abrasive materials. Square back bend here has removable wearback made of hardened steel.

FILTER for corn grits handling system atop storage silos. Conveying ducts upper right are for reclaiming grits.

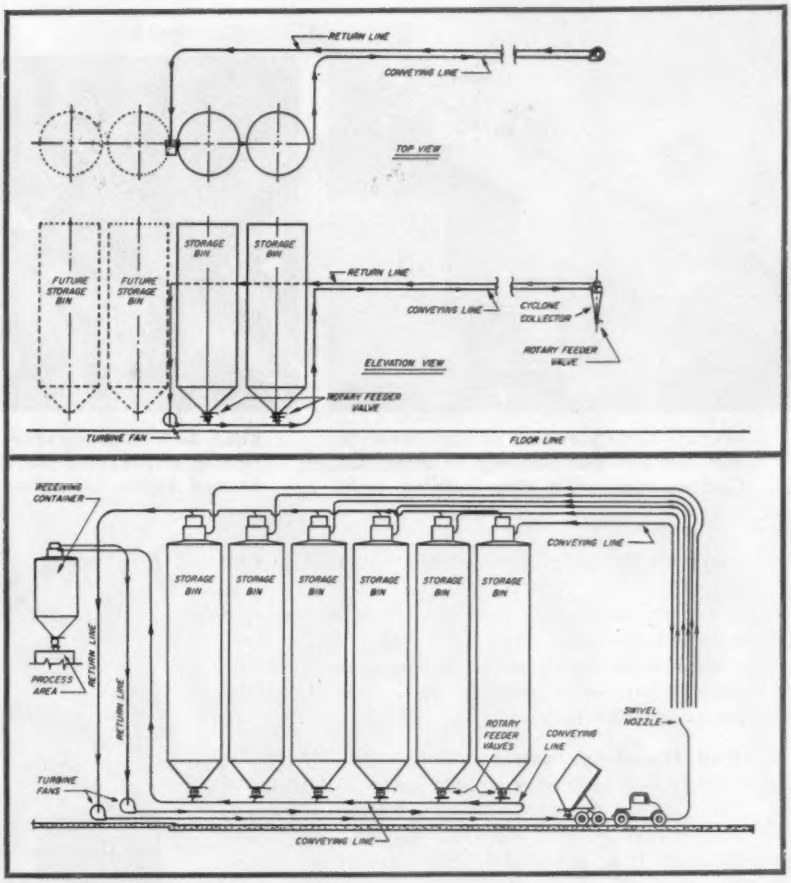


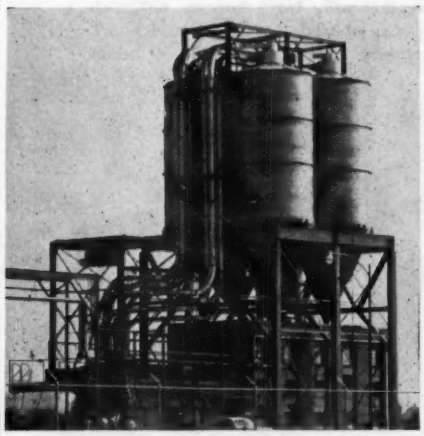
EXHAUSTER station on Piel malt handling system. Air drawn through filter by positive exhauster is pure.

PORTABLE hopper slits bags, prevents spread of dust at start of pneumatic system handling delicate material.

RIGHT: Typical closed circuit system with one feed inlet, one discharge.

BELOW: Diagram and photo of closed-circuit system with multiple unloading points & product conveyed to multiple storage bins without switches.





Brewery, Staten Island, N. Y., replaced an outmoded conveying system—for malt and coarse corn grits—with two separate pneumatic conveying systems.

The two systems were installed because of the existing relative location of the grits and storage facilities. They completed a bulk handling system which included: bulk delivery of malt and grits in sealed box cars at a rail head a mile from the brewery; delivery of grits and malt to the plant by self-filling, pneumatic transfer trailer; pneumatic conveying of grits and malt from respective trailer unloading stations to respective storage bins; and fully automatic reclaiming facilities for both materials.

Grits Handling System: A box car load of corn grits is emptied pneumatically, by the operator, using a flexible tube and nozzle inside the car. The trailer has a capacity of 22,000 pounds of grits. At the unloading station in the brewery yard, the trailer is unloaded by gravity into a pick-up hopper. The operator can load, deliver and unload one van load in 1½ hours, total elapsed time.) Pneumatically raising the grits up and into one of the two storage silos completes the unloading process. The system is capable of

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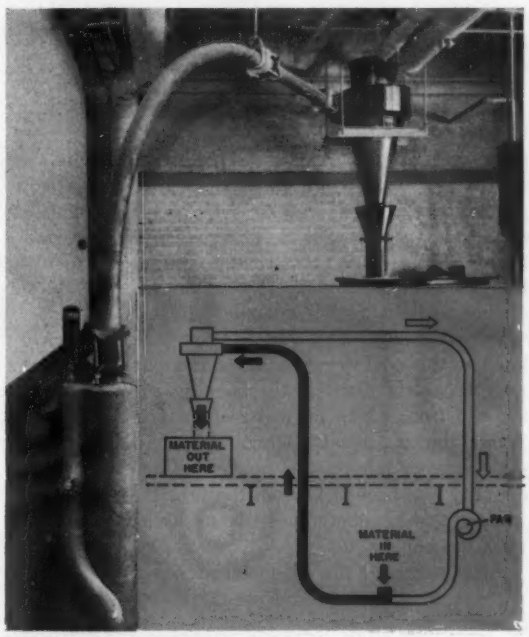
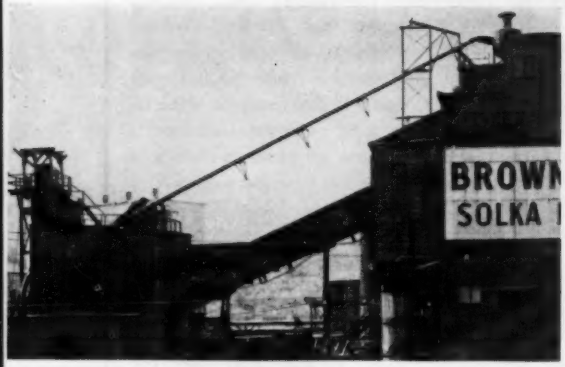
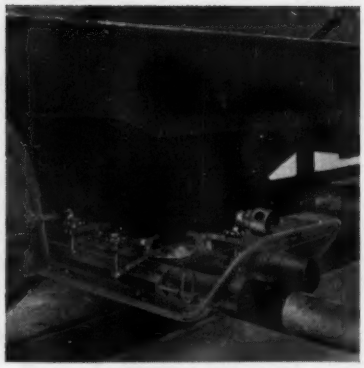
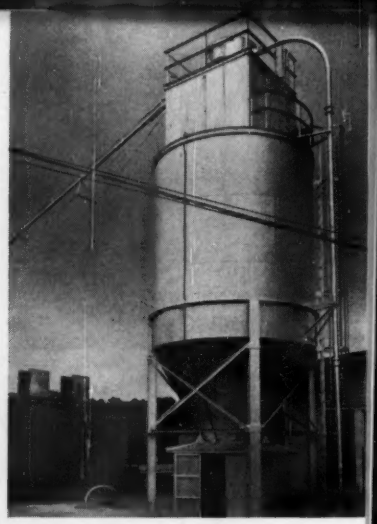


SMALL PLASTICS PLANT made big saving with air conveyor; installed system to handle 150 lbs. of chemicals per hour, thus eliminating manual bag handling.



WOOD CHIPS carried in duct shown as dark line between buildings of Brown Co. Cyclone receiver is atop building, right.





BULK STARCH unloaded pneumatically from hopper car, carried by air stream to silo. One man unloads car in about 4 hours. Manual boxcar unloading formerly took eleven men 4 hours.

conveying 20 tons of grits per hour from the pick-up hopper.

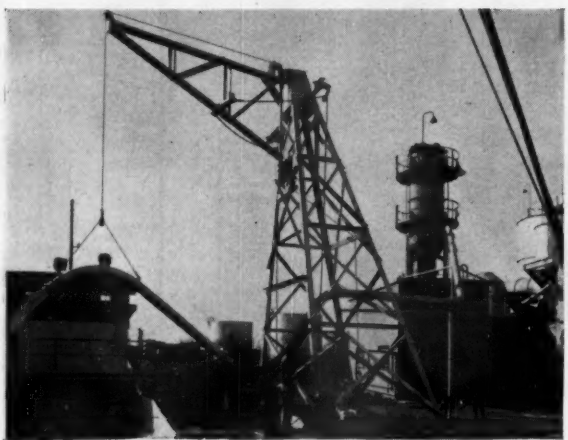
Reclaiming the grits from one of two storage silos and their discharge into a scale hopper in the brewhouse is controlled from the cooking room. In the reclaiming process for grits, five to six tons of material are moved each hour.

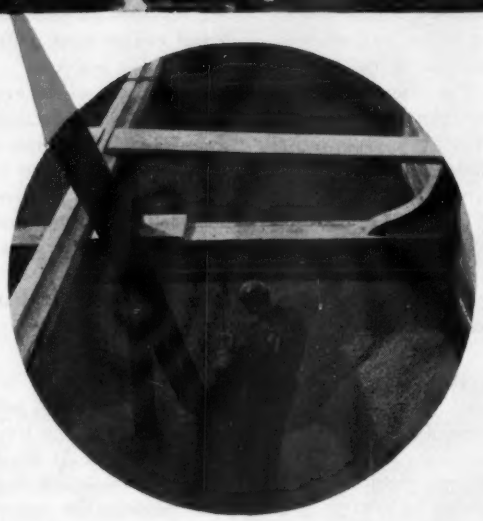
Malt Handling System: Malt is brought to the brewery in the same transfer truck used to carry grits. The trailer is thoroughly cleaned between trips. The same procedure used for trucking grits is repeated for malt. It is unloaded from the trailer by gravity into the malt pick-up hopper in the brewery yard. From here it is raised by vacuum to an air-material separator and then distributed in any one of four 200,000 pound storage bins below. The system provides for reclaiming malt from any one of the storage bins to a weigh-hopper above the malt mill.

Remote Controls and Safety Devices: The operator controls the entire grits unloading operation from a master control panel. Material is directed into the desired silo until the level reaches a height sufficient to actuate a material level indicator. A red light shows and a horn sounds to warn the operator to stop the flow from the trailer. If the warning is ignored, the system will shut down automatically.

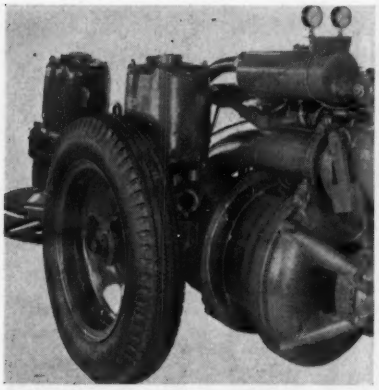
In reclaiming from the storage silo to the grit hopper, the operator again has full control. From a remote control panel in the cooking room, he selects the silo from which he will reclaim grits, presses the "Start" button, and the stream of grits flows into the scale hopper above the cooker. When a sufficient quantity has been delivered, the flow is automatically stopped and the operator is free to discharge the batch from the hopper.

Atop the silo, the air-material separator provides the separation of the air from the material at the end of the conveying stream. From there it is discharged by gravity into the storage silos by means of a rotary discharge lock at the bottom of the unit. It is completely automatic.

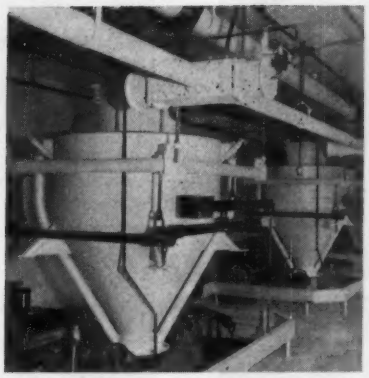


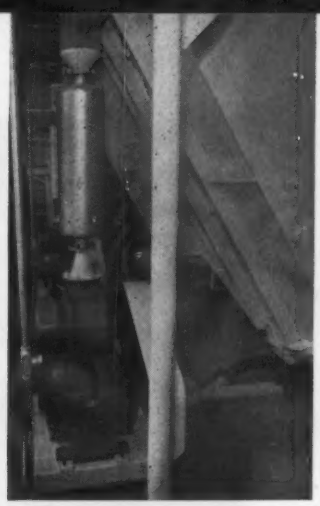


UNLOADING grain from barge, derrick and boom arrangement supports and positions nozzle, in barge, handled by one man. With 1200 bushel per hr. rate, it's emptied in 5 to 8 hrs.

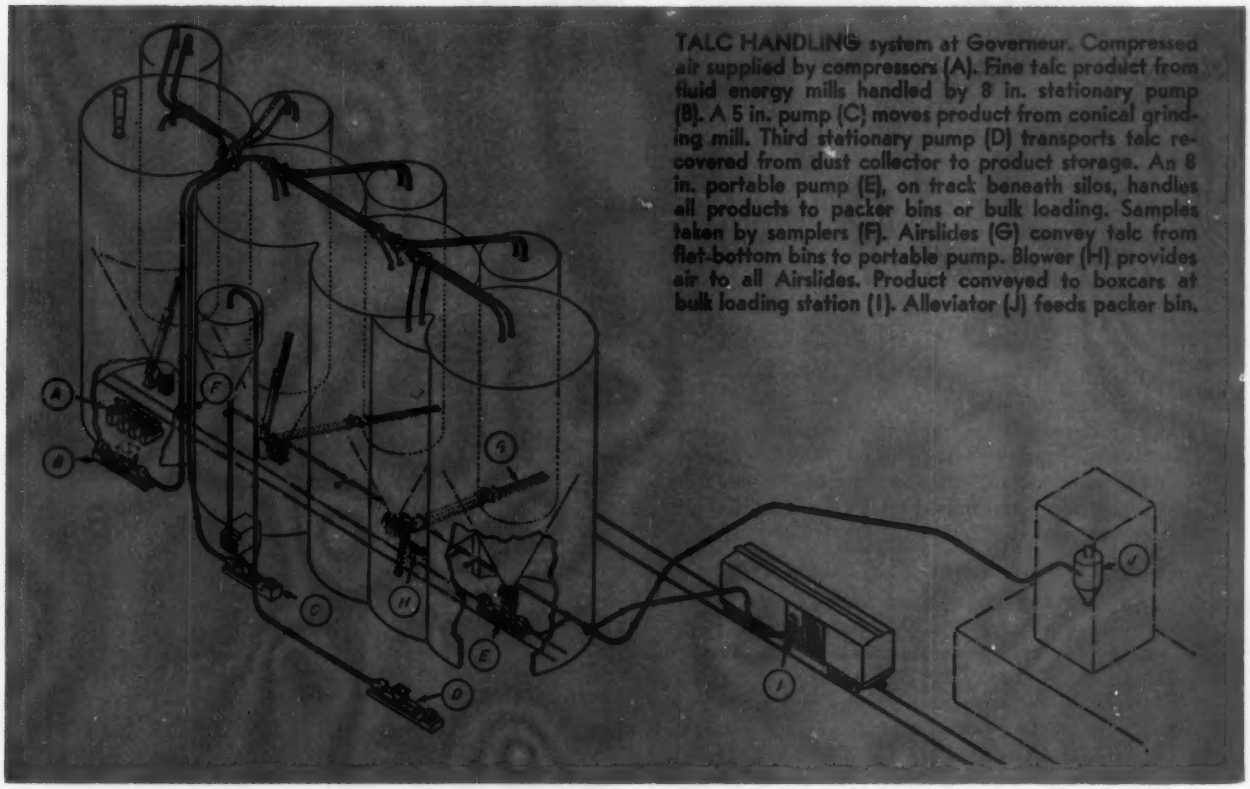


PRESSURE-TYPE unloader (for heavy bulk) spins material into screw conveyor, then pushes the material by air.





HANDLING FLOUR at Ward's blower (right) provides airstream for conveyor from bins to mixers. By-pass provides close weighing with dribble stream. Weigh hoppers situated above dough mixers (left) control feed.



TALC HANDLING system at Governeur. Compressed air supplied by compressors (A). Fine talc product from fluid energy mills handled by 8 in. stationary pump (B). A 5 in. pump (C) moves product from conical grinding mill. Third stationary pump (D) transports talc recovered from dust collector to product storage. An 8 in. portable pump (E), on track beneath silos, handles all products to packer bins or bulk loading. Samples taken by samplers (F). Airslides (G) convey talc from flat-bottom bins to portable pump. Blower (H) provides air to all Airslides. Product conveyed to boxcars at bulk loading station (I). Alleviator (J) feeds packer bin.

The filter in the grits system, as in the malt system, is a fully automatic continuous type. Air is drawn through the filter by a Roots-type positive exhauster, from which it passes into the atmosphere, completely purified.

Control of the malt unloading procedure is very similar to that for unloading grits. The system is run by the operator from an unloading control panel adjacent to the malt pick-up hopper. The operator remotely selects the bin which he wishes to fill by a turn spout control switch in the control panel. Pressing the necessary buttons starts or stops the operation. When a horn sounds to warn him that the bin is full, he stops the flow of malt from the trailer and depresses the "Stop" button on the unloading panel. If he misses, the system shuts down automatically.

The brewer in the mashing room reclaims the malt in the same manner as he reclaimed the grits, and with the same ease. The conveyor and filter components for handling malt are essentially the same as those for the corn grits system. However, the filter is an indoor type and is mounted above the storage bins. Conveying ducts for this system have square, replaceable wearbacks, easily renewed, which assist the malt to negotiate turns with ease.

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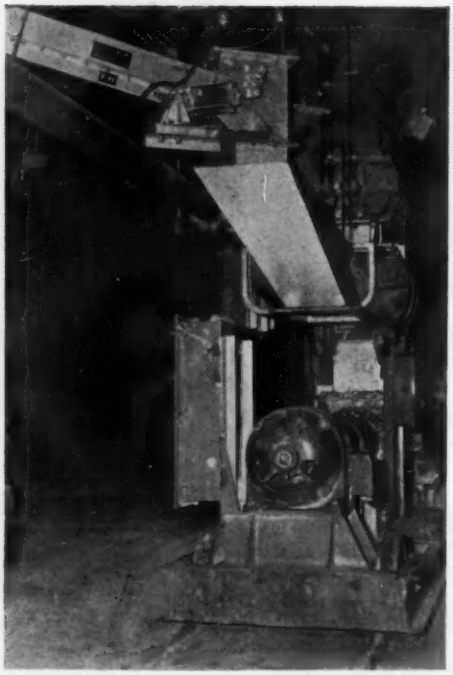


TRACK-MOUNTED PUMP reclaims talc from silos and bins, delivers to bulk or packing areas. Overhead is Airslide from flat-bottom bins with outlets not directly above pump. In pump, talc feeds by gravity to screw which discharges chamber where it is fluidized.

The primary result of installing bulk pneumatic conveying equipment was to provide sanitary operation and reduce the number of mechanical devices formerly required. But the work force requirements were also reduced, and men formerly assigned to cleaning were transferred and re-trained for more productive work.

Wide Capacity Range In Closed Circuits

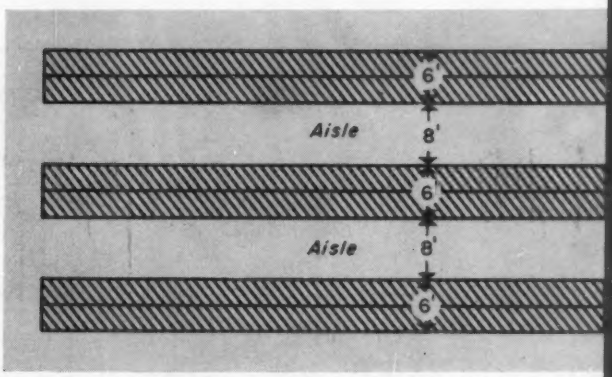
An accompanying diagram shows a typical, standard closed circuit system. It has one feed inlet point and one discharge point. Materials enter the conveying line through a rotary air lock feeder valve driven by a fractional horse power gearmotor and are delivered to a high efficiency cyclone separator. Here the solids are separated from the air and discharged through a second rotary air lock valve. The air is exhausted from the top of the cyclone separator and passes through the turbine fan and return air line back to the inlet feed point. The turbine fan may be installed at any point on the return air line between the cyclone separator and the inlet rotary lock valve.

This system is being used for bulk handling of materials from covered hopper cars, bulk trucks, and bulk shipping containers. It is also used for in-process handling. The capacity of the majority of such systems ranges from 300 pounds per hour to 50,000 pounds per hour. Total vertical and horizontal conveying distances will range up to 750 feet.

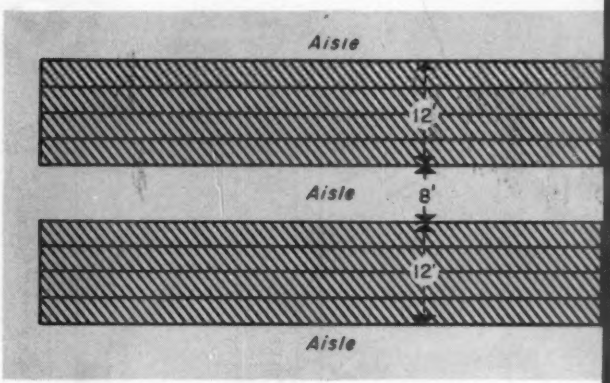
(Continued on page 150)

List of Typical Materials Being Handled With Pneumatic Conveyors

Alloy Dusts	Fluorspar
Alum	Fly Ash
Aluminum Oxide	Fuller's Earth
Ammonium Nitrate	Gilsonite
Ammonium Sulphate	Gluten Meal
Arsenic Oxide	Grains
Asbestos Dust	Graphite
Asphalt Fillers	Gypsum (raw or calcined)
Bauxite	Ilmenite
Beet Pulp, dried	Iron Salts
Bentonite	Lime, hydrated
Bone, steamed	Lime, pebble
Borax	Lime, pulverized
Brucite	Limestone, pulverized
Calcium Carbonate	Litharge
Calcium Phosphates	Magnesite
Carbon, activated	Magnesium Oxide
Carbon Black	Malt
Carbonaceous materials	Manganese Dioxide
Carboxymethyl Cellulose	Milk, dried
Catalysts, Petroleum	Mineral Wool
Cellulose Acetate	Nylon flake
Cement, Portland	Nylon pellets
Cement Raw Material	Ores, pulverized
Cereals	Petroleum Coke (fluid process)
Chalk	Phosphate Rock, pulverized
Chrome dust	Polyethylene
Chromite	Polyethylene, cubes or powders
Clays, dry	Polymer powders
Coal, pulverized	(used in synthetic fibers)
Coffee Beans, green	Polyvinyl Chloride
Coffee Solubles	Pyrites
Coke Dust	Quartz, pulverized
Copper Converter Dust	Resins, synthetic
Copper Oxide	Rice
Copra	Rice flour
Cork (granulated)	Rubber pellets
Corn Flakes (brewers')	Salt
Corn and Corn Products	Salt Cake
Cottonseed Meal	Sand
Cranberries (frozen)	Sawdust
Cryolite	Seeds
Cyanamid	Semolina
Detergent Powders	Shells, pulverized
Dextrin	Silica, pulverized
Diatomaceous Earth	Slag, pulverized
Dicyandiamide	Slate, pulverized
Dolomite	Soap powders
Eggs, dried	Soda Ash
Feed ingredients	Sodium Bicarbonate
Feeds, soft	Sodium Nitrate
Feldspar	Sodium Phosphates
Ferrochrome	Starches
Fertilizers	Sugars, refined
Flaxseed	Talc
Flint	Titanium Dioxide
Flour	Wood chips
Flour Premixes	Wood flour
Flue Dusts	Zinc oxide



PRESENT Stacking Plan—utilized area for every 100 square feet of floor space is 43 square feet.



PROPOSED Plan—stacking area for every 100 square feet of floor has been increased to 60 square feet.

40% Greater Storage Capacity

through double-row stacking

EFFECTIVE utilization of warehouse area can be increased by about 40 percent with this proposed system. It involves a relatively inexpensive attachment for a standard fork truck. The increase in useful area is brought about by stacking materials at twice the normal depth.

Basically, the attachment is capable of skidding pallets off the forks for unloading and of drawing them onto the forks for loading—both actions under power and without affecting the stability of the truck.

Grooves are machined into the sides of forks to carry a cable wire and form guides for push and pull sliding blocks. At the tip of each fork there is embedded a pulley over which the wire passes.

Push and pull sliding blocks: One side of each block is anchored to the cable; in the other side there is a hole through which the cable slides. When the cable circuit is set in motion, the block slides

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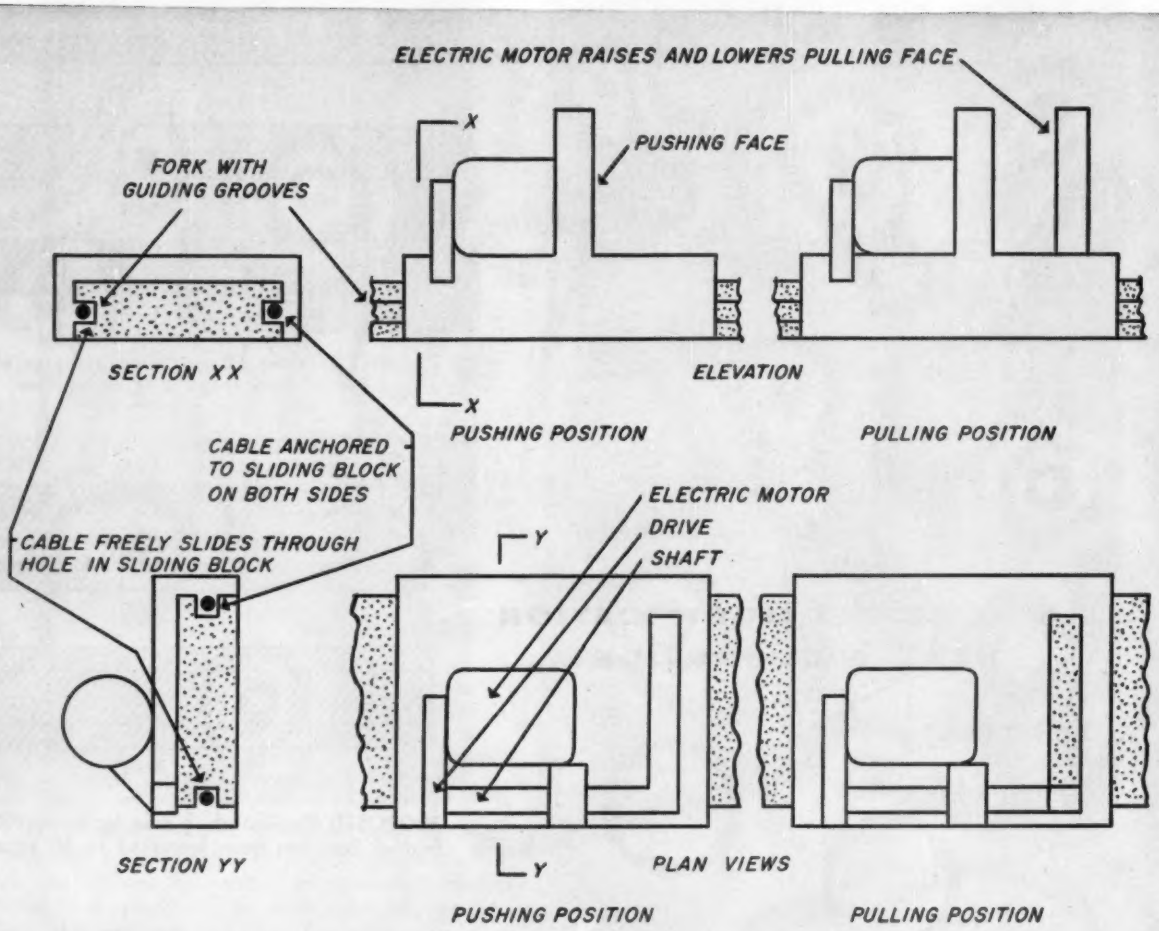


along the fork. A pushing lug on the block bears against a pallet and pushes it away as the block slides forward. A reversible electric motor (fractional horsepower), mounted on the block, drives a shaft through a reduction gear. A quarter turn of this shaft raises or lowers a pulling lug. When the block slides backwards, this pulling lug draws the pallet onto the forks. When not in use, the lug is lowered and remains flush with the surface of the sliding block. Blocks on both forks act simultaneously at all times.

Cable circuits: The cable wire forms a closed circuit. Part of the circuit is housed in the grooves in the forks; the other part is within the apron of the truck. That within the apron is made up of a chain which engages a toothed sprocket. The sprocket wheel transmits the drive from a reversible hydraulic motor to the cable circuit. When the hydraulic motor is activated, the cables move in the grooves of the forks, causing the push and pull motion of the sliding blocks.

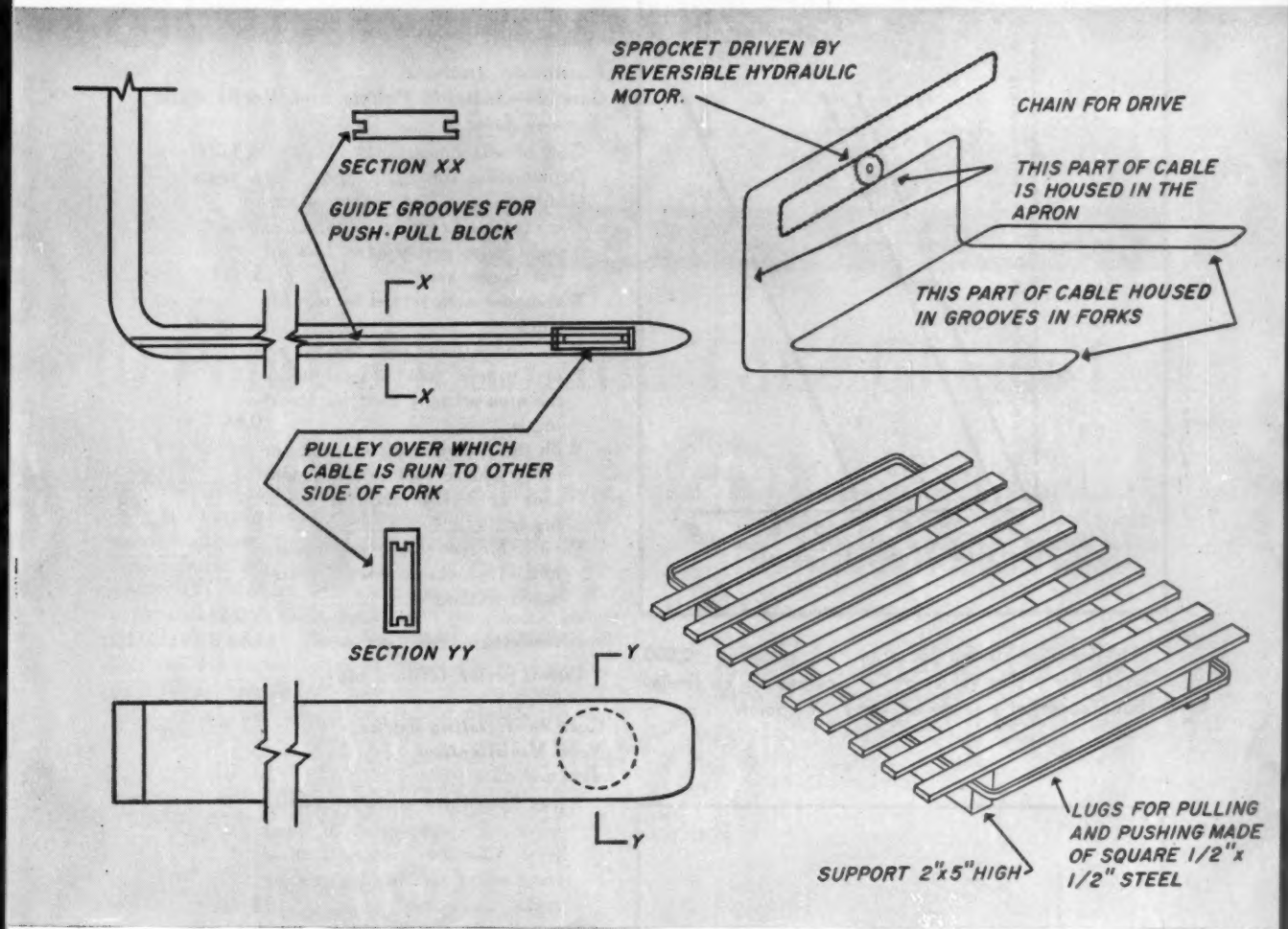
Drive and controls: The hydraulic motor which drives the cable circuit is fed by a hose connection from the main hydraulic system of the truck. Controls are positioned conveniently within reach of the operator. Electric connections to the motors on the push and pull sliding blocks are provided from two, small, self-rewinding, spring-loaded cable drums mounted on the apron. Cable drums are supplied by an insulated cable from the battery system of the truck. Controls for these, too, are positioned within easy reach of the operator.

Safety devices and indicators: Limit switches should be fitted on the electric motors to stop them when the pulling lugs have reached the raised or lowered positions. Release valves on the hydraulic system are necessary to prevent over-travel of the sliding blocks. An indicator which tells the operator how far the pallet has been pushed out may also be helpful.

Operating the System

Pallets: Of the single face type, pallets have lugs at either end for pushing and pulling.

Racks: Storage racks are made of angle iron frame with shelves of sheet metal—which must be smooth enough for pallets to skid over them without difficulty. Racks must be sufficiently wide to hold pallets stacked



in two rows on one side of each access aisle.

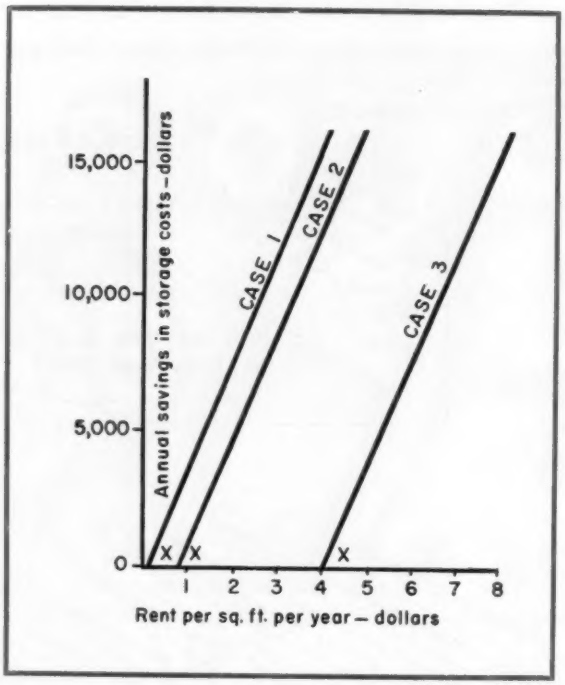
Picking up a load: If loads are within reach of the forks (front row of shelves), the sliding blocks are kept in the drawn-in position, and loads are picked up or set down in the usual manner.

If the loads are in the back row of a shelf, the operator brings the truck into position so that the tips of the forks just reach the pallet. The operator then slides the push and pull blocks outward until the pushing face just bears against the lug on the pallet. He then switches on the electric motors to raise the pulling lugs. The operator next draws the push and pull blocks inward. The pulling lugs hook onto the lug on the pallet and pull it onto the forks (The pallet skids over the surface of the shelf). Forks are then raised to pick up the load.

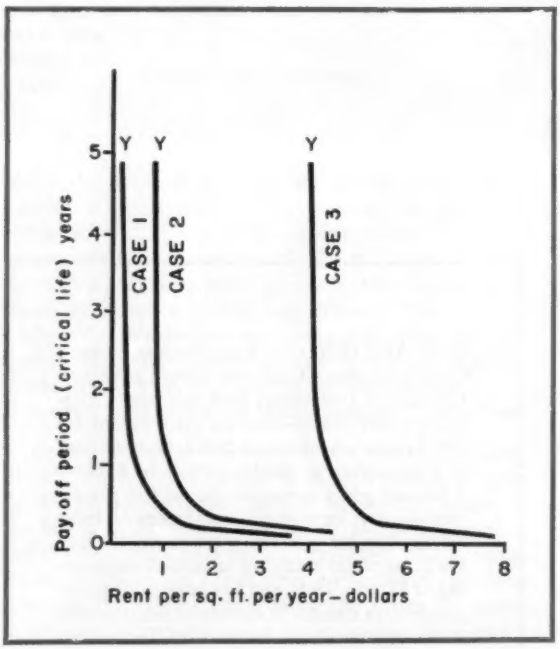
Setting down a load: If the load is to be set on the back of a rack, the operator first sets the load down on the front row. But before he backs the truck away he moves the sliding push and pull blocks out-

(More on next page)

THE AUTHOR, G. Ramakrishna, won a Clark Equipment Company Award at Illinois Institute of Technology with this paper, originally titled "Deep-Stacking Attachment for Lift Trucks". A native of India, he graduated in Engineering at the University of Madras. After two years as a sales engineer in his native country, he won a Government of India Scholarship for graduate work in the U. S. A. He is currently studying industrial engineering at Illinois Tech. and has been taking supplementary courses in industrial management at the Massachusetts Institute of Technology and Harvard Business School.



ANNUAL SAVINGS for area "A" equalling 10,000 sq. ft. For higher values of "A", curves will be similar but steeper, still nearly hit same "X" points.



PAY-OFF PERIODS for "A" of 10,000 sq. ft. Higher values of "A" will cause slight vertical downward shift but curves will nearly pass through "Y" points.

wards. The pushing face bears against the lug on the pallet and pushes it all the way to the back row of the shelf.

Economic Analysis

Case 1—Suitable Pallets and Racks Exist

Assumed data:

Cost of attachment	$ 1,500
Depreciation life	5 years
Comprehensive rate of interest, insurance and taxes	10%
Annual rent per square foot of warehouse area	$ (r)
Warehouse area served by one lift truck	A sq. ft.
With conventional methods, for every square foot of warehouse the area actually used for stacking is	0.43
With the proposed attachment, for every square foot or warehouse area actually used for stacking is	0.60
Saving in rent for every square foot of warehouse area, by proposed method	$\frac{0.17\ (r)}{0.43}$
Net effective saving per year	(A) 0.4 (r) —150
Payoff period (critical life)	$\frac{1,500}{(A)\ 0.4\ (r) - 450}$

Case 2—Existing Racks Need Modification

Assumed data:

Racks have three shelves plus one layer of sheet metal at floor level. Cost per square foot of sheet metal covering for existing racks	$ (a)
Depreciation life	10 years
Depreciation	10%
Interest	6%
Insurance & taxes	2%
	18%

Storage area is 0.67 of total warehouse area

Annual cost per square foot of warehouse area $= (3+1)\,(a)\,(.18)\,(.67)$
$= 0.48\ (a)$

Net effective saving per year
$(A)0.4(r) - (A)\ 0.48(a) - 450$

Payoff period (critical life)
$$\frac{1,500}{(A)0.4(r) - (A)\ 0.48(a) - 150}$$

Case 3—Pallets and Racks are Newly Installed

Assumed data:

Cost of new racks per square foot	$ (s)
Depreciation life	10 years
Cost per pallet	$ (p)
Depreciation life	3 years

(Continued on page 102)

FLOW'S

MAINTENANCE NOTE BOOK

10-Point Pneumatic Tube Check List

KEEPING any pneumatic tube system in top shape is a simple process, but one well worth doing to insure continued, trouble-free operation over the years. A pneumatic tube system consists of three basic elements: (1) carriers, which are the containers for the paperwork, small parts, tools, cash, etc., being transported; (2) tubing, through which the carriers travel between the various stations where the sending and receiving terminals are located; (3) an exhauster, which creates the stream of air that propels the carriers, usually at approximately 35 feet per second.

To help keep field installations in good working order, here's a 10-point program of routine maintenance directed at the three main system elements.

CARRIERS (See Figure 1)

1. Check for worn felts once a month. These felts are located on the head end of the carrier and serve as impact absorbers. A felt head gage,

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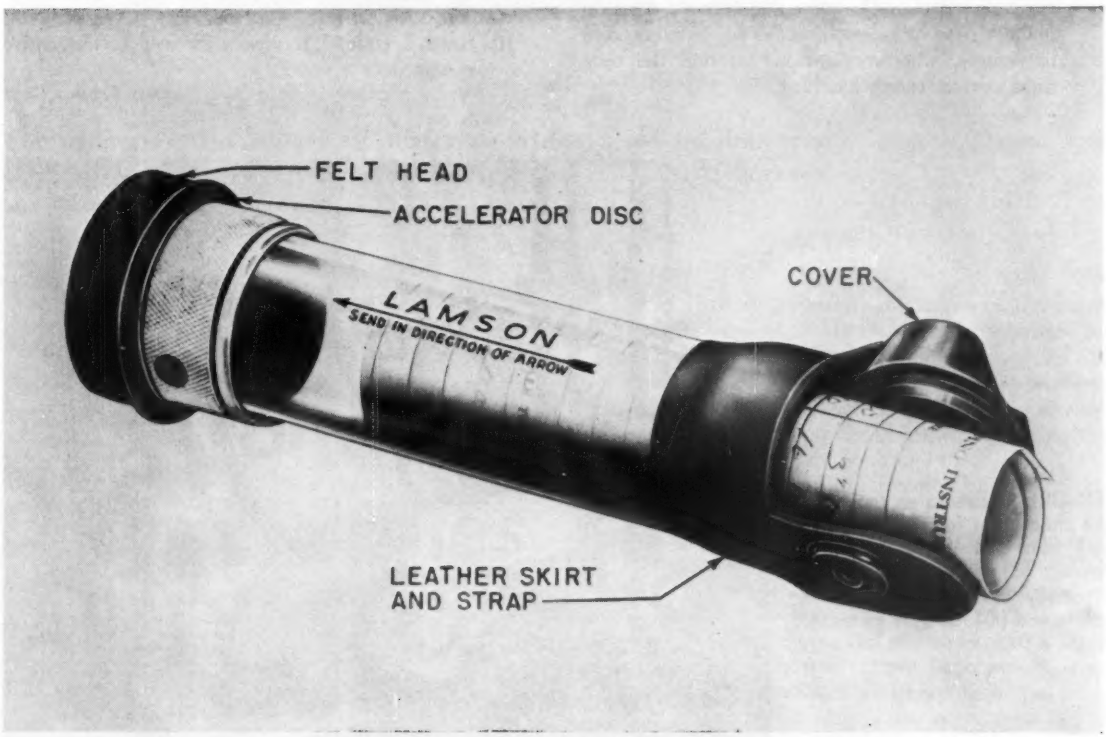


FIGURE 1: Typical pnuematic tube carrier. Note parts that need periodic checking: felt, disc, cover.

available free from most pneumatic tube manufacturers, tells you when felts must be replaced.

2. Check for worn accelerator discs each month. These discs, located next to the felt head, form the vacuum seal between the carrier and tube wall. If excessively worn or torn, they will prevent carriers from moving at top speed.
3. Check the hinged cover that forms the bottom of the carrier. Be sure that closures and straps are in good condition so that carriers can be latched shut. Leather straps and skirts will last longer if given an occasional dressing with liquid wax.

TUBING AND TERMINALS

4. Inspect the hinged clapper valves that seal off receiving terminals and sending inlets. When checking, listen for a slight whistle that usually indicates an air leak. Such leaks may be caused by faulty seating of clapper, hinge pipe, hinge or by a weak spring. Air leaks waste power and slow carrier travel.
5. Check exposed tubing for dents or other damage to the tube wall. Dented tube lines can slow the carrier's travel or block the line entirely. Caution maintenance personnel, such as painters and carpenters, who are working around the tube lines against rough handling.

EXHAUSTER (See Figure 2)

6. (Note: Shut off before attempting disassembly) Clean all screens (B and C) once each week, using a stiff wire brush to remove the web of lint that gathers on the mesh of the screen. Remember that in most cases the exhauster operates continuously, and because of the high volume of air passed through the system, a layer of lint and other airborne particles inevitably builds up on the screens. Unless this layer is cleaned off regularly, airflow will be reduced and the carriers will not travel at top speed.
7. Check the lubrication of exhauster motors every three to six months. See the motor manufacturer's instructions for proper lubrication.
8. Check to see that the blast gate setting (A) is not disturbed. Blast gate should be open to full stop.
9. Check that wind gate settings (D) are not disturbed. These should be set only by a trained installation man. The wind gate, usually located adjacent to screen box in each line leading to exhauster manifold, should, however, be checked to make certain that the travel of the butterfly valve is not impaired by collected lint or debris.
10. Have a trained service man inspect the entire system once a year.

Courtesy Lamson Corp.

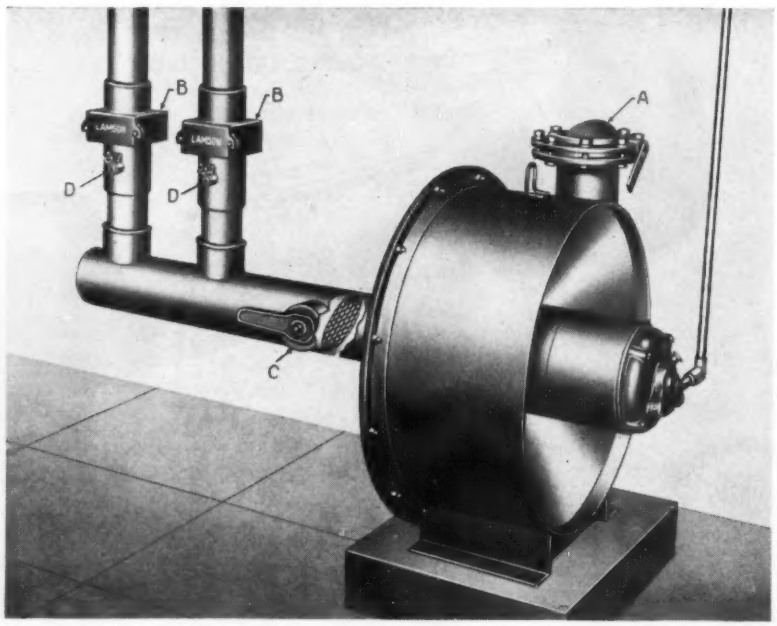
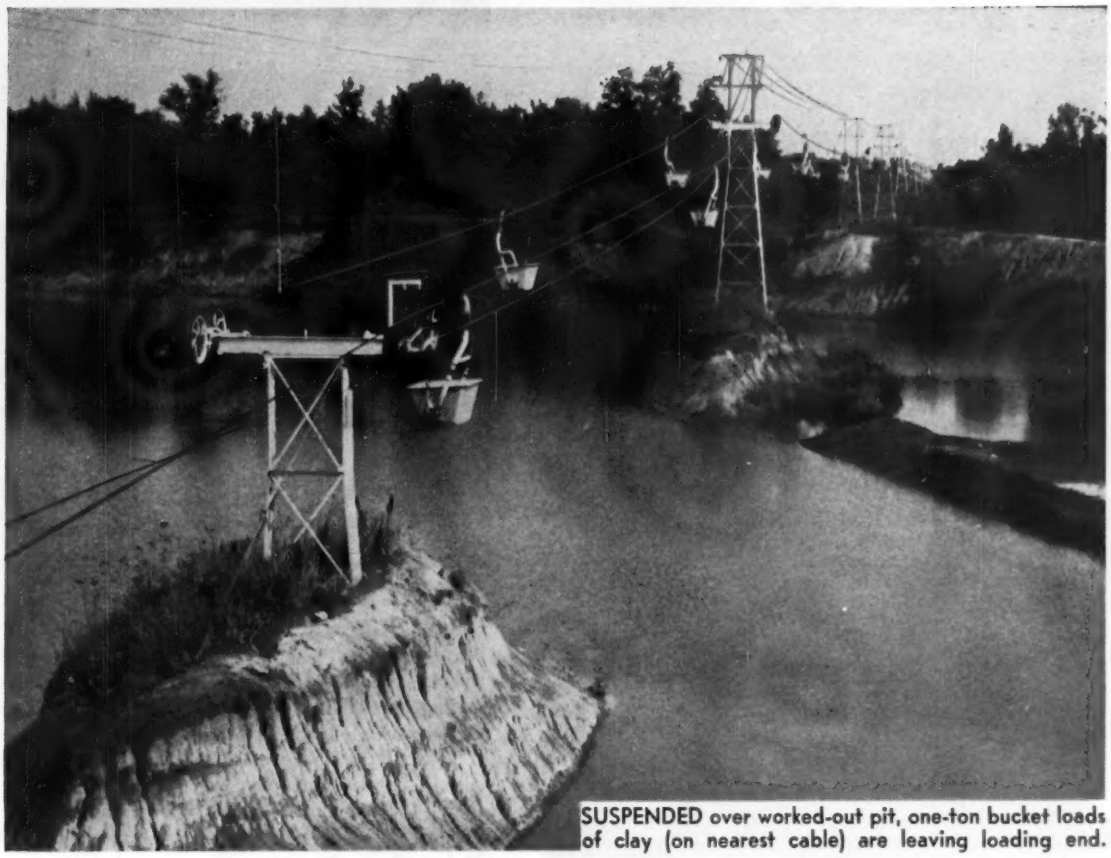


FIGURE 2: Exhauster should be checked at four locations: (A) blast gate; (B) screen boxes; (C) manifold screen, normally covered by access plate and (D) the wind gates.



SUSPENDED over worked-out pit, one-ton bucket loads of clay (on nearest cable) are leaving loading end.

For uninterrupted supply of materials which must be delivered long distances over extremely varied and difficult terrain, see how a . . .

Cable Tramway Hurdles All Obstacles

BY BUILDING an aerial cable tramway, the Burns Brick Company, in Macon, Georgia, increased its output from clay pits by six times as much as it took out by former methods. Output is now 180 tons per hour. And the firm can operate through three months of bad weather—drawing dry, blended clay from the 50,000 tons stored under roof.

The pits are three and a half miles from the plant, across three lakes in wooded land.

When the plant was started, trucks were used to haul clay. Then a narrow gauge railroad was built. With locomotives and cars, the top output was 30 tons an hour. One difficulty dogged these early methods—the clay stuck to every shovel and container, and a third of any rated capacity was carried back and forth as a dead load. When bad weather came, the output from the pits and manufacturing in the plant were cut to zero.

(More on next page)

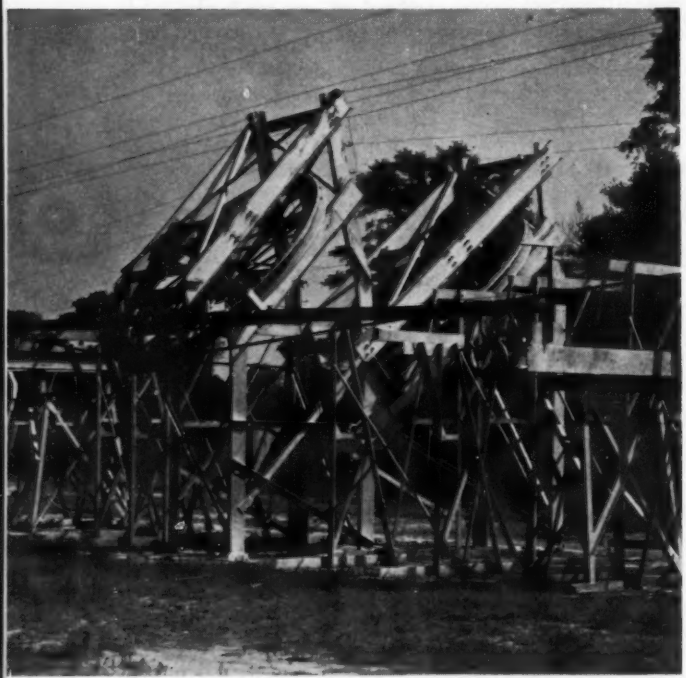
CABLE TRAMWAY

Continued

Henry K. Burns, Jr., had designed the plant from its beginning, in 1936. To develop it abreast of sales potential, something had to be done to bring in a stock of clay sufficiently large to keep the plant going at top level, and to insure continuous operations through any weather. He then learned that the details which troubled him most had been worked out successfully in a gold mining operation in Canada. After a trip there, the system as it stands was worked out on his drawing board.

Endless Steel Cable On 11-Foot Sheaves

The essential elements of the design are an endless 1⅜ inch steel cable which runs on sheaves eleven feet in diameter at the loading and unloading ends—more than three miles between centers and supported on steel towers 300 feet apart. Aluminum buckets carrying one ton apiece are carried on the cable and spaced 160 feet apart. The line is not straight. It detours around one lake, making two elbow turns which required special detailing in the scheme.



AT ELBOW TURN, dip of cable automatically transfers buckets from cable, picks them up again on other side.

ON TOWERS there are four sheaves on load side, two on return side. Power and phone lines are above.

Some of the 45 towers are on solid ground. Those in the lake are on deep concrete foundations. They are about 40 feet high. When the carrying side of the cable is deflected by loaded buckets, they ride about 30 feet above the water. The sides of the towers are splayed from a wide base to about three-quarters of their height and are vertical in the top section. The end towers in the lake are braced against the pull of the cable by short cables anchored to dead-men on solid ground.

For the construction of the towers standing in the lake a wooden foot bridge was built along the line. All the concrete and steel were carried out on this bridge.

Each tower has a cross-member at the beginning of the vertical top section, on the outer ends of which are the sheaves for supporting the cable. On the load side there are four sheaves, and on the return side only two. Power and telephone lines are carried on the vertical top section above the cross-member.

Dump Full Length of Storage Area

At the storage house, the towers are higher to carry the buckets 60 feet above ground so that they can be dumped above the stored clay throughout the length of storage space.

One of the ingenious methods employed in construction was that for hauling the cable into place over the sheaves on the towers. Two reels were used—a total of 30,000 feet. It is 6 x 21 fiber core, Lang lay, preformed. Two splices had to be made—one during placing operations and the other when the cable had been pulled through.

TAIL SHEAVE mounted on platform which runs on rails. Tension pull of 60,000 lbs maintained by 4-part tackle ending in tail line weighted with 15,000 lb concrete block suspended in distant tower.

Lifting the cable into place on land was not difficult. For the section over the lake a lead line was rigged and fastened to the cable. This carried over the sheaves of the towers. At the far side of the lake the tail line was hooked to a tractor which could run on solid ground on an old levee. When the cable came through to this point, the tackle line was unhooked and moved ahead around the next low ground.

Telephone stations were established at crucial points along the line so that the different crews could keep each other informed of progress.

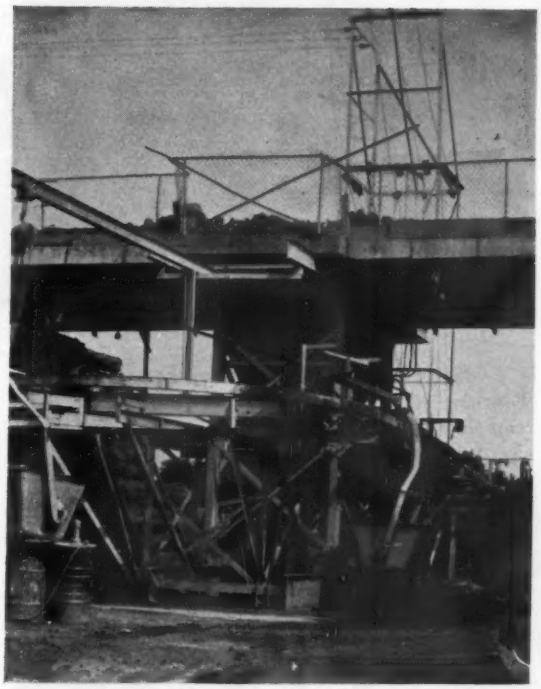
Tail Sheave On Rails

The tail sheave is mounted in a structural steel platform which runs on rails. A four-part tackle bent into the rear of this platform runs several hundred feet to a steel tower. At the base of this tower the tail line runs under one sheave, then up over another at the top. On the down side it supports a 15,000 pound concrete block, which maintains an initial tension of 30,000 pounds on each side of the cable, or a total pull of 60,000 pounds.

One of the turns in the line is an elbow standing at 17 degrees; the other is at 9 degrees. These are necessary to get around a small lake over which it was impossible to obtain a right-of-way. The elbow sheaves are idlers, merely making the change in direction. The method of getting the buckets around these elbows is the same as for turning them at the loading and unloading ends.

At these points the buckets leave the cable and ride on rails. The rails are so located in relation to the cable that they pick up the buckets and return them to the cable after they have made the turns at the loading and unloading ends, and at the elbows. This makes the system workable. If the buckets had to make their turns on the cable, their movement would be much more difficult, or perhaps impossible.

The trolley which carries the bucket has two chilled "sockets" for riding on the cable. They are about 4 inches long longitudinally, spaced wide apart, with grooves slightly larger than the cable. They merely ride the cable, supporting the buckets. The bucket



LOADING end where buckets stop under aluminum hopper filled by earth movers from platform above.

halter is slung on a journal, which permits the bucket to hang always in a normal position as it rides up and down the slopes of the deflected cable.

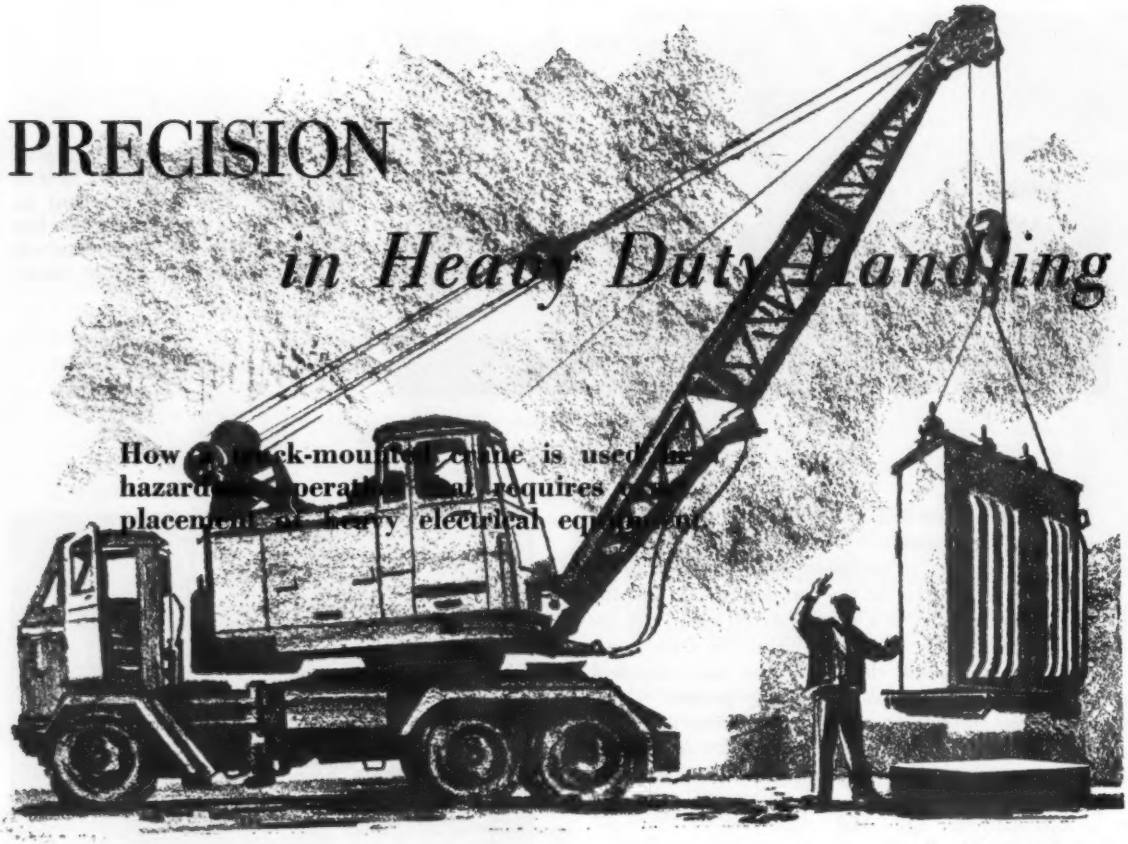
Close alongside these cable engagers are two small trolley wheels for riding on rails. The rail is an upright steel plate section about 4 inches deep and half an inch thick.

The dip of the cable where it comes into a rail section is such that when a bucket reaches this point the trolley wheels engage the rail. On the leaving side the bucket rides along until the cable, rising alongside,

(Continued on page 156)

PRECISION

in Heavy Duty Handling



How a truck-mounted crane is used to [illegible] hazardous operation that requires [illegible] placement of heavy electrical equipment.

IT takes precise handling to install heavy duty transformers into operating electrical systems. Two years ago the Cleveland Electric Illuminating Company sought a method whereby it could replace the time-honored but wholly innefficient method—brute manual force—by a mechanical system that could take the manual labor out of the operation.

The qualifications for such a system were rigid. These transformers weigh as much as 23 tons, and when being installed they must be positioned so accurately that tolerances are sometimes as little as 1/16 inch. If they are not properly positioned, serious damage to the transformers may result, or they may become jammed and altogether impossible to install. In addition, network transformers often must be lowered through a maze of high tension cables carrying currents of up to 33,000 volts.

This is a ticklish handling job. Clearance for the huge transformers in these networks is usually about 18 inches, and they dare not come in contact with the live current lines, or instant tragedy may occur. So dangerous and exacting is this task, in fact, that the company does not attempt it in wet weather, for fear that the high-voltage current will arc through the air.

Crane Does the Job

To accomplish the difficult assignment, the company purchased a truck-mounted crane having controlled motor speeds and boom controls precise enough to afford the accurate control needed in positioning the heavy but delicate loads.

The mobile unit not only simplifies the handling job considerably but also goes to the job under its own power—a major advantage to a company with operations spread throughout the highly industrialized Cleveland—Lake Erie area.

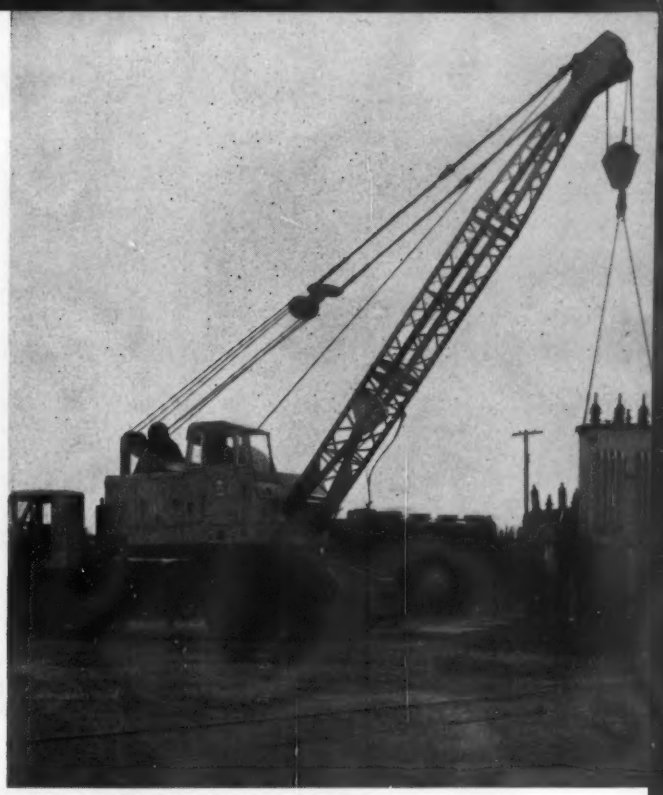
The transformer is lifted onto a semi-trailer, in the company's yard, and transported in this way as close as possible to the location in which it is to be installed. Under its own power, and at highway speeds up to 35 miles per hour, the crane is driven to the location, where it unloads the electrical equipment from the semi and proceeds to position it for installation. Obstructions are no problem; if there is a fence or similar structure in the way, the crane operator simply raises the load until it has reached the required height to step over it.

Five men are needed for the operation—in addition to the crane operator, a crew of four workers is required to line up the transformer prior to the actual job of installing. Although the amount of handling depends more on the nature of each installation than on the size of the transformer, the average job takes about ½ day for the lightest equipment, with considerable increases in time as the equipment gets heavier.

Reduces Time, Manpower

Before the crane was used, crews of workers relied on back-breaking manual labor to position the equip-

SEMI-TRAILER brings transformers as close as possible to point of installation, then crane takes over and eases equipment into exact position for precise installing.



PRECISE CONTROLS enable operator to spot transformer accurately within minute tolerances, eliminating back-breaking manual labor that formerly was involved.

ment. The four corners of the transformer were jacked up to allow skid boards to be placed underneath. Then rollers were put under the load, and the transformer was pushed manually into position. The heaviset units required the use of winch lines and snatch blocks. Considerable manual labor was involved. In most cases the job took approximately three times as long as under the present method. Furthermore, it was often necessary to tear down fences and similar obstructions to roll the equipment into position.

Emphasizes Safety

The crane is equipped with an overload safety device, which automatically shuts off power in case the load is too heavy. This eliminates the possible danger of exceeding the capacity of the crane in lifting the transformers.

The company also improves its safety record by using the crane in other ways. Its precise controls make it suitable for setting poles, another operation which had formerly been done by manual methods.

A 90-foot pole weighs in the vicinity of 5000 pounds, and erection of the poles manually was a hazardous task.

Uses of the crane are not limited to these operations, however. It is often employed in the yard to lift cable drums, oil breakers and regulators. When the regular yard cranes are tied up, it is also used to unload carloads of poles. In addition, consideration is now being given to a method of laying poles along rail tracks which would involve the crane.

THE CRANE is also used for poles, cable and other equipment, and the company is now considering using it from flatcar to lay poles alongside railroad tracks.

HIGH-LIFT STRADDLE TRUCKS stack loaded pallets three tiers high in order-pick lines. Aisle widths are kept narrow to provide increased storage space throughout.

LOW-LIFT PALLET TRUCKS carry loads to and from shipping and receiving docks. Incoming rail shipments are palletized before they are removed from boxcars.

How to REDUCE EXCESS

Daily stock service from mechanized distribution center eliminates "store warehousing" for retail food chain, cutting expense of high inventory.

By Gardner H. Stern, Jr., Hillman's Inc.

A SINGLE warehouse—the new Hillman's warehouse in Chicago—provides daily stock service for (1) a chain of eleven big supermarkets, six with their own restaurants; (2) a candy factory; (3) a downtown food specialty store and catering service; (4) three bakers.

Under the new warehouse and operations system, each store submits a daily order and receives a daily delivery. The stores are permitted to order any grocery or frozen item in the warehouse. Only three deliveries per store per week were made formerly, and these were divided into commodity classes—meaning a particular item could be ordered only once a week. The result was a piling up of inventory in each store, as much as $50,000 in peak periods. This had to be backed up by a $400,000 inventory in the warehouse. Because of the greater flexibility of the daily order system, only immediate days' needs now are kept in the markets. "Store warehousing" has been eliminating, stepping up efficiency and cutting overhead.

When Hillman's decided to build the new supply station in 1952, they consulted grocery warehouse design and operation specialists. Architects and engineers studied the situation and came up with some specific recommendations: five separate order-pick lines, bulk-weight grouping of merchandise, controlled slot system, IBM punchcard control, standard small pallets stacked five loads high, and power-lift and hauling equipment. It is, actually, five warehouses engineered into one single-story structure having a capacity of 115,000 square feet.

Palletized Order Picking

All orders are picked onto 48″ x 40″ pallets, and are carried by fork truck to the loading platform. There the loaded pallets, up to 5½ feet high, are moved into the outbound truck. (Trucks are loaded and unloaded in twenty minutes.) The palletized load

OUTGOING LOADS are delivered to the loading platform on low-lift trucks, and placed directly on delivery trucks. Orders are picked on 48x40 inch pallets.

FREEZER COMPARTMENT is laid out like a separate small warehouse, with fast moving items stored on the floor, and slower items on racks. All are palletized.

INVENTORY

AT RECEIVING PLATFORM, goods are unloaded onto pallets and carried by lift trucks to proper storage areas. Empty pallets stand in stacks, ready for use.

arrives at the store, where power machines unload the truck. The previous day's pallets are picked up and returned to the warehouse.

Six Separate Order-Pick Lines

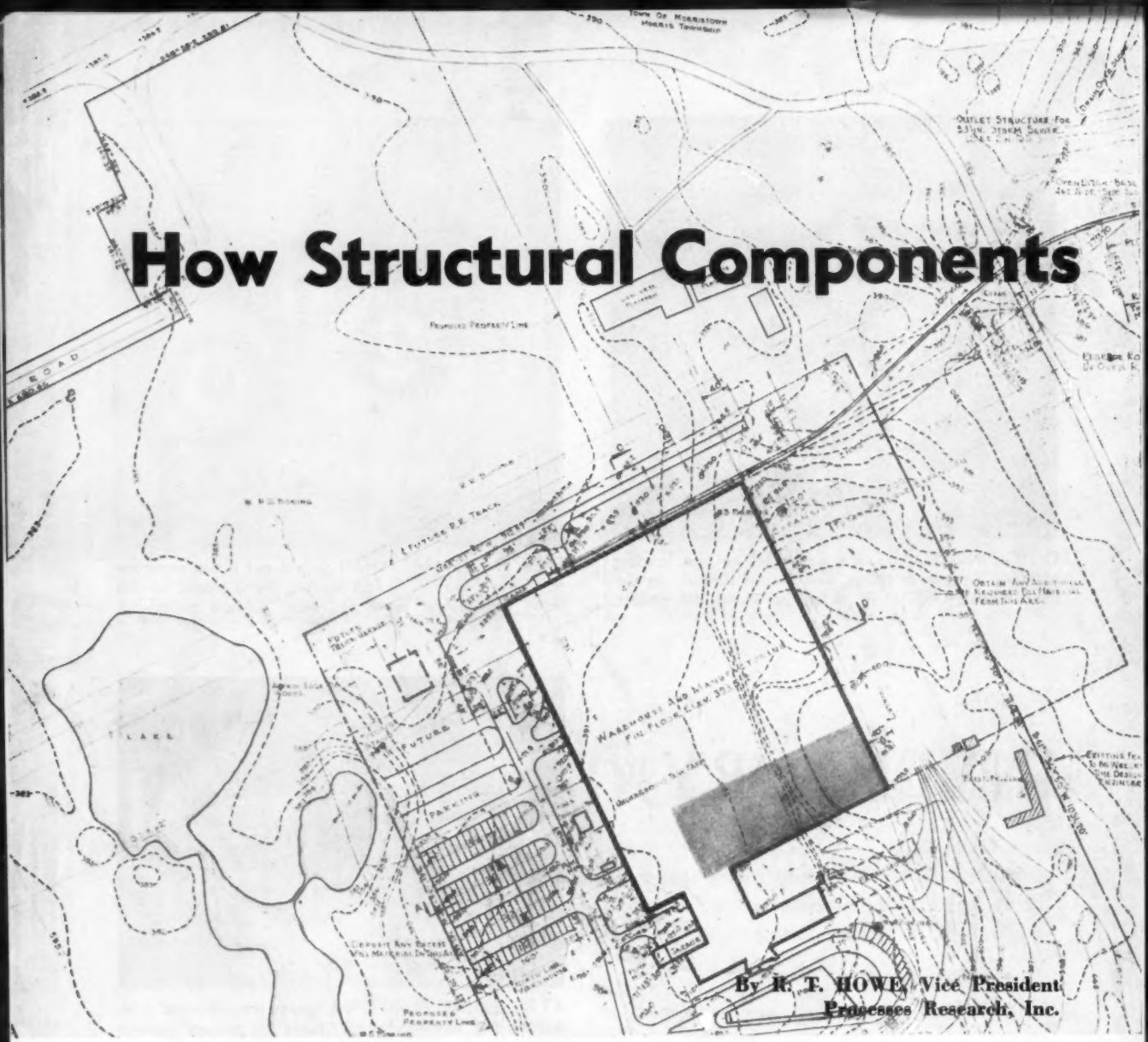
The order pick line for the eleven supermarkets includes about 2800 dry grocery items broken down into fast-move, medium-move and slow-move shelf items. The usual commodity groupings are not employed. Standard 40″ x 32″ pallets are used for storing merchandise in the fast-move area, and on storage racks for slower moving items.

The bakery division stock over 100 items on its own pick-line, and provides daily delivery to the three bake shops. General paper supplies, consisting of 275 items, and the candy factory with 175 items, each has its own order pick line. Orders are picked in these sections twice a week.

(Continued on page 179)

BAGGED GOODS are stored on pallets, eighteen bags to a load. Guards on the corners of the pallets protect bags from damage by lift trucks in the narrow aisles.

How Structural Components



By R. T. HOWE, Vice President
Processes Research, Inc.

ONE factor which is commanding increased attention in economical and effective material handling is the influence of structural components of industrial buildings on material handling carried on within such buildings.

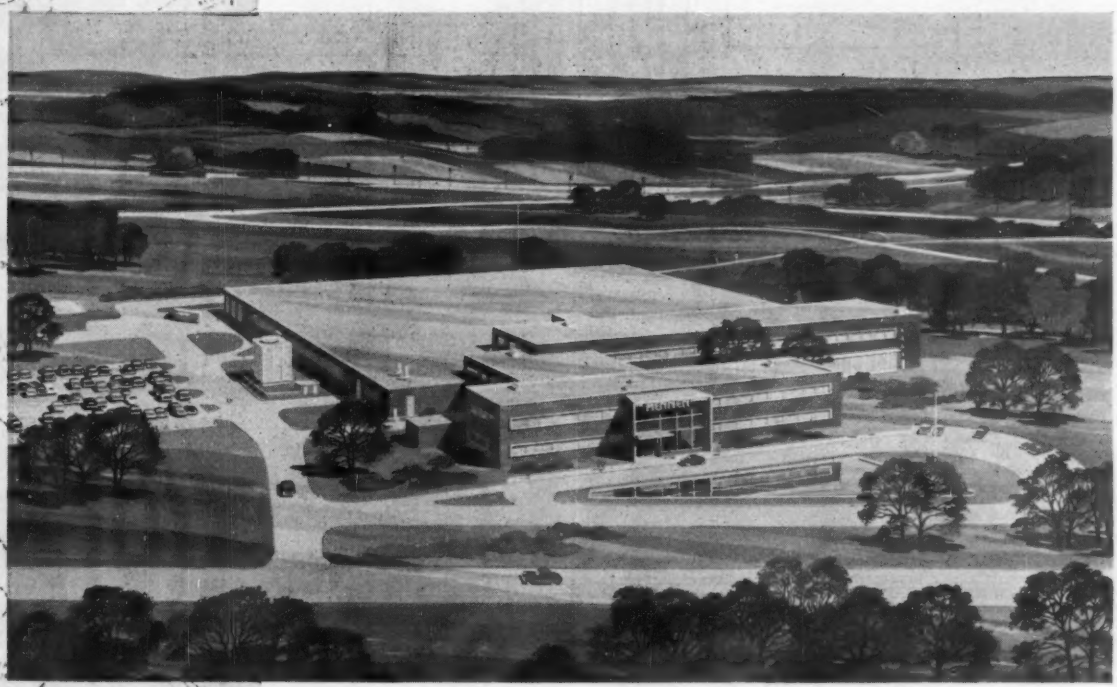
Structural components include not only the usual building features which influence efficient material handling and transporting, such as column spacing, headroom, window location, lighting, truck and railroad dock design. They may also include less common but highly influential factors, such as building shapes, provision for expansion, single versus multi-story buildings, types of floor construction and internal planning of department locations.

To bring this broad subject down to some practical considerations, it will be helpful to look at the design and development of a new plant for an old industry—The Mennen Company of Newark, New Jersey. By reviewing this actual case history of a plant involving manufacturing, packaging, warehousing (of raw and finished goods), receiving and shipping, we can touch upon most of the major factors involved in trends in material handling and the effect on structural components.

This company's products are divided into three major groups: (1) brushless and lather shave cream soaps, (2) after-shave and skin lotions and baby oils and (3) face and foot powders. Involved in the manufacture of these products is the receiving and storing of a wide variety of raw ingredient and packaging materials ranging from alcohol and expensive perfumes, bottles and cans, to talc imported from Italy. This involves extensive rail and truck receiving operations and delivery to warehouse storage in tanks, drums and sacks.

The building in which the products were made since

Affect Plant Layout



TOPOGRAPHY of plant site influences final layout and design of plant.

the late nineties was continually revised internally to accommodate the rapidly increasing production requirements. Warehousing areas were finally completely taken over by expanded manufacturing and packaging facilities. Large warehouse space had to be rented at a distance of 6 miles from this plant in the heart of Newark. This involved a raw and finished material handling problem of major order.

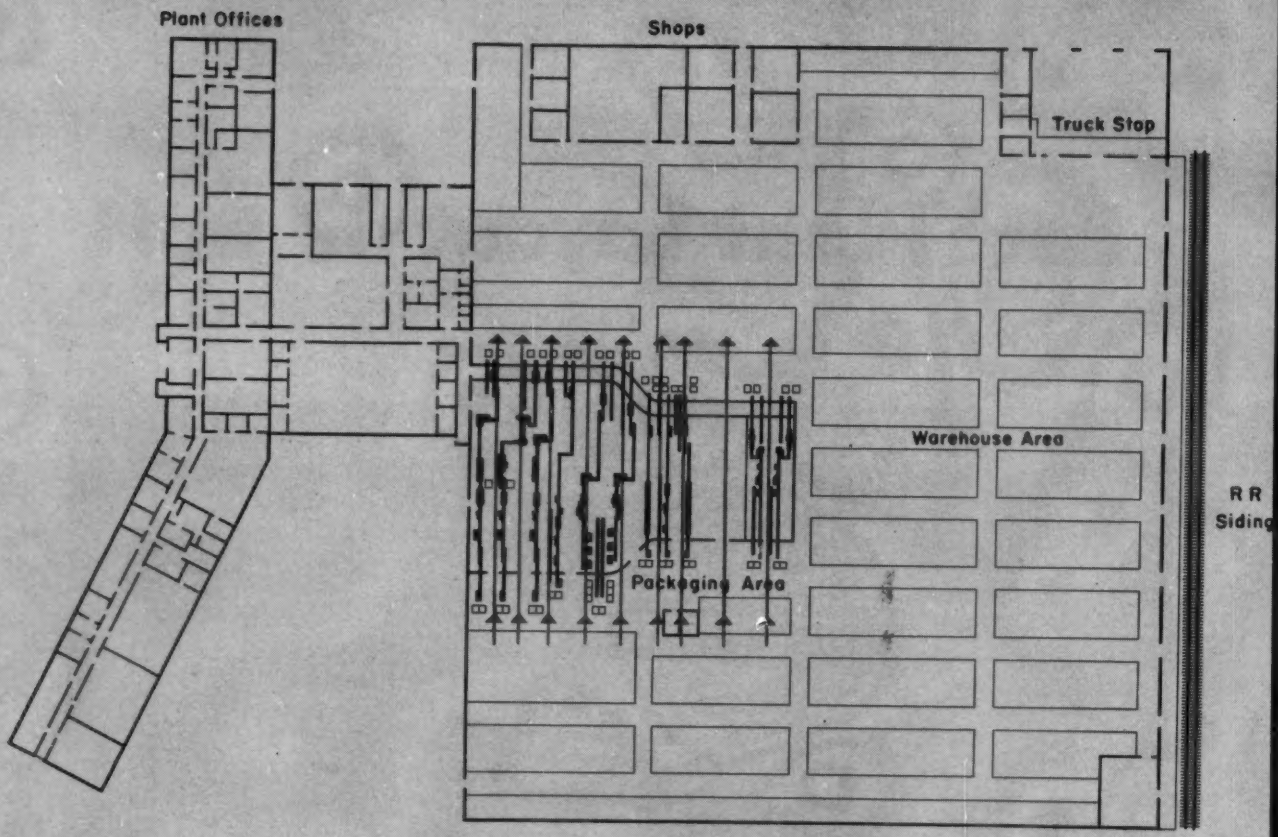
Storage Space Needed

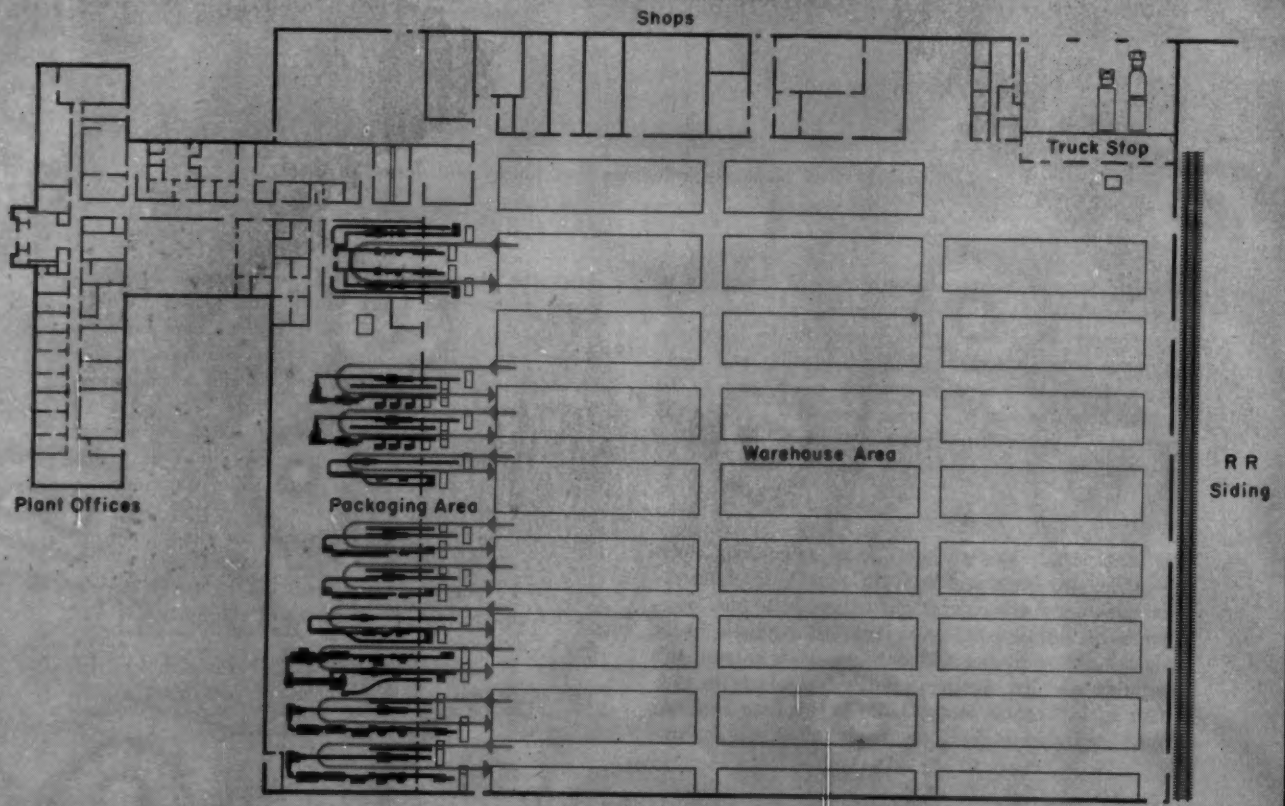
Four large tractor-trailer units were kept busy bringing raw materials from the rented warehouse to the plant and returning finished goods to the warehouse. So little storage space was left available in the plant building proper that raw materials entered this building and left again as finished products in a 4-hour cycle. Trouble at any point in this long handling route had the double and costly effect of shutting down the production plant if the material handling stoppage exceeded a few hours. This was a weighty consideration in the decision to build a new plant on a new and well-accommodated site combining warehousing, manufacturing, packaging and all administrative functions in the same structure.

Such a new plant was dreamed about for several years. The revised preliminary conception of one architectural firm comprised a single floor warehouse, a ground floor packaging room and a partial two-story section over the packaging room for manufacturing operations. An adjoining single floor office structure had to be considerably spread out to cover the required square foot requirements of administrative and sales functions.

The Mennen Company showed foresight in approaching the major problem of procuring a new

(More on next page)


Plant Offices
Shops
Truck Stop
Warehouse Area
R R
Siding
Packaging Area


Shops
Truck Stop
Warehouse Area
R R
Siding
Plant Offices
Packaging Area

plant design in which the latest and finest facilities could be assembled to produce their merchandise. They engaged two engineering companies to make a study and a survey report on the required physical facilities needed for their combined operations with recommendations on the type of building and plant equipment best suited to meet the requirements.

The engineering firm submitting the best analysis would receive the contract for engineering, specifying and supervising construction of the new plant. Then began the project of producing the working design of a plant, the structural components of which facilitate material handling to the maximum degree.

Acreage Is Prime Factor

In the modern trend to single story operations and provision for future expansion of buildings, generous acreage in the site selected becomes of paramount importance. One of the sites considered by Mennen was long and proportionately narrow in shape, with a railroad along one side and a steep hillside along the opposite boundary. In several ways, such a site would affect and dictate the design of structural components. Multi-level construction on such a site would permit storing raw ingredient materials, such as talc in bags, caustic, etc., on a high level constructed into the hillside. Access roads to this higher level would permit receiving raw materials from trucks and storing and transporting by fork trucks on this level to manufacturing space, still on this high level.

Packing and warehouse space on a lower level further down the hillside could be constructed to accomplish gravity flow from manufacturing to packaging. Finished goods could leave the packing room by fork truck on the lower level to export storage space awaiting rail or truck shipment from the lower level. Some of the disadvantages of this structural arrangement are seen in duplication of truck docks on the two levels (one for receiving and the other for shipping), duplication of fork trucks, larger and less unified trucking crews, duplication of toilet facilities to accommodate personnel on two levels, etc. These and other considerations caused The Mennen Company to reject this hillside site.

A flat site with good rail siding possibilities was finally located within 30 miles of the old plant site in Newark. Sufficient property to accommodate future expansion should be of paramount importance in selecting a site for operation over a long period of years when currently unpredictable future production may require greatly expanded facilities. In this case, approximately 125 acres were available either in smaller portions or in toto. Wisely, the entire acreage was acquired. Portions of this land, if not needed in future plans of The Mennen Company, can be developed and sold to selected occupants, thus controlling the character of future neighboring industries.

Flatness of site eliminates expensive grading and gives greatest latitude in structural design possibilities. Thus, unhampered by site limitations, design of an "ideal" plant could proceed. After much preliminary design study and analysis of the major functions—manufacturing, packaging, warehousing and administration facilities—it was recognized that the packaging room design and the arrangement of product packing lines in this room would have the greatest effect on material handling in general.

Finished product and packaging materials would flow into this room and packaged finished goods could proceed from this area in high volume. Careful analysis of projected future production requirements established the need for five present and one future liquid filling lines, one line for jar filling, two lines for shave cream packaging, two lines for powder packaging and space for two more possible future lines.

Packaging Room Important

Much design consideration was concentrated in developing the best possible layout for an ideal packaging room considering:

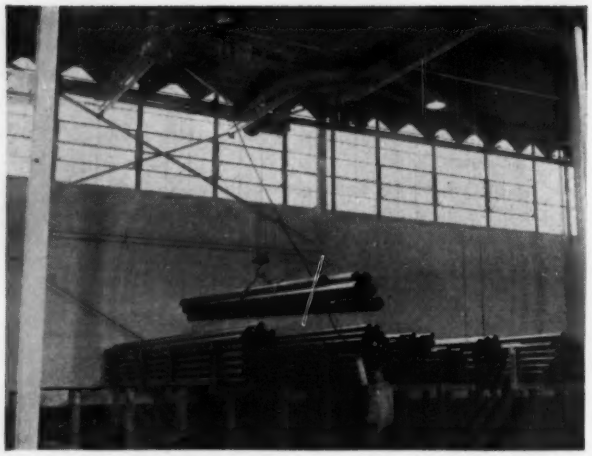
1. Efficient flow of product through the packaging machinery.
2. Arrangement of lines relative to each other and relative to overhead manufacturing operations and equipment.
3. Partitioning off the powder making and packing areas for greatest cleanliness.
4. Ease of operation.
5. Ease of supervision of personnel.
6. Personal safety.
7. Lighting.

After studying L-shaped, U-shaped and straight-through packaging lines, and various modifications of all of these, and their consequent effect on manufacturing, warehousing and material handling operations, two designs seemed to incorporate most of the ap-

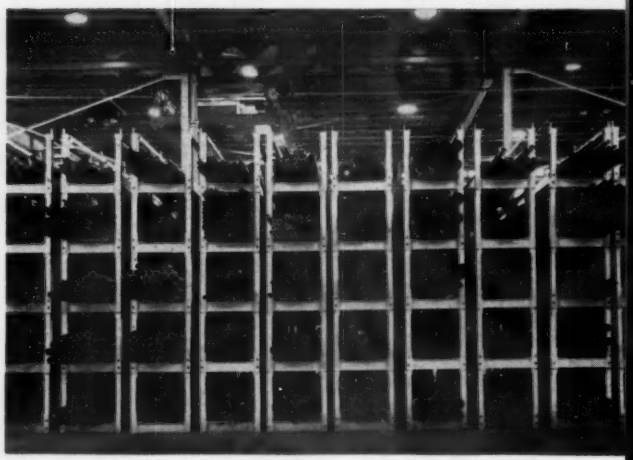
(Continued on page 162)

PRELIMINARY LAYOUT of new Mennen plant (above left) featured "straight-through" packaging lines to permit the smallest possible enclosed packaging room floor space. However, certain disadvantages would be present, such as the need for additional columns, the division of storage of materials and the small amount of daylight available. The revised, and adopted, layout (lower left) comprised "U-shaped" packaging lines which consolidated all trucking, in-feed and pack-off operations in a single, long service bay. It afforded greater flexibility in storage of materials in the warehousing area, since it was not split by packaging lines.

OVERHEAD EQUIPMENT permits gondola car on spur track inside building to be unloaded in 3 hours where it formerly took them 18 hours.



ORDER PICKING of tubing with sling is done with one handling by hoist traveling through the transfers.



CRADLE SECTIONS having 2-foot height are tiered five high, crane has sufficient headroom over them.

WHEN the C. A. Roberts Company laid out its new steel tubing warehouse in Franklin Park, Ill., its primary aim was to step up labor output over that of its former plant in Chicago. That this was accomplished is evidenced by the fact that after a year's operation, rail car unloading time has been reduced 83 percent.

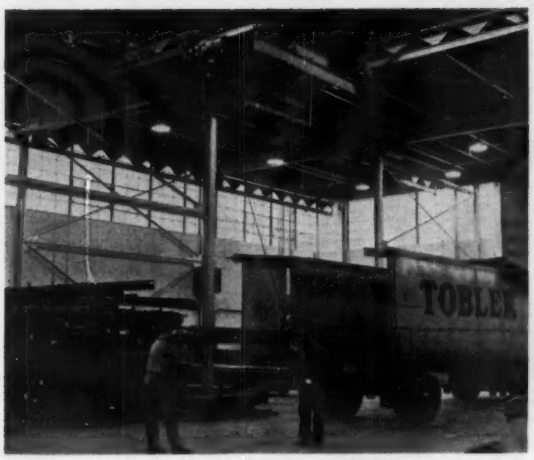
The handling equipment the company chose for this operation consisted essentially of an overhead transfer bridge system that would move steel tubing quickly from incoming gondola cars at one end of the building to storage areas. Where it took three men 18 hours to unload a car at the old plant, the same three men with the new equipment now do the job in three hours. Also, the company has eliminated excessive rehandling with the completely integrated system.

Simplicity is embodied throughout the plant layout. The warehouse is 384 feet long and incorporates 16 24-foot bays. A 48-foot-wide storage area extends down the center of the warehouse, and is flanked by two 42-foot-wide clear passageways. Two 24-foot storage areas run adjacent to the building walls. An office forms a wing outside the southwest portion of the building.

WITH THIS OVERHEAD

TRANSFER BRIDGE SYSTEM . . .

an 18-hour job now takes 3 hours



OUTGOING BUNDLE of tubing weighing 1800 pounds is loaded onto truck after continuous run from storage.

TRACTOR-TRAILERS are utilized in the warehouse to make shorter hauls and to pick up some mixed orders.

The overhead transfer bridge system was designed expressly to avoid rehandlings. Nine transfer bridges operate on five pairs of crane runways in the five longitudinal bays of the warehouse. Two 5-ton hoists and three 3-ton hoists operate on the nine transfer bridges. By means of 15 transfer points spaced at intervals, loads can be moved to any part of the building without unhitching.

Here is how handling is completely integrated.

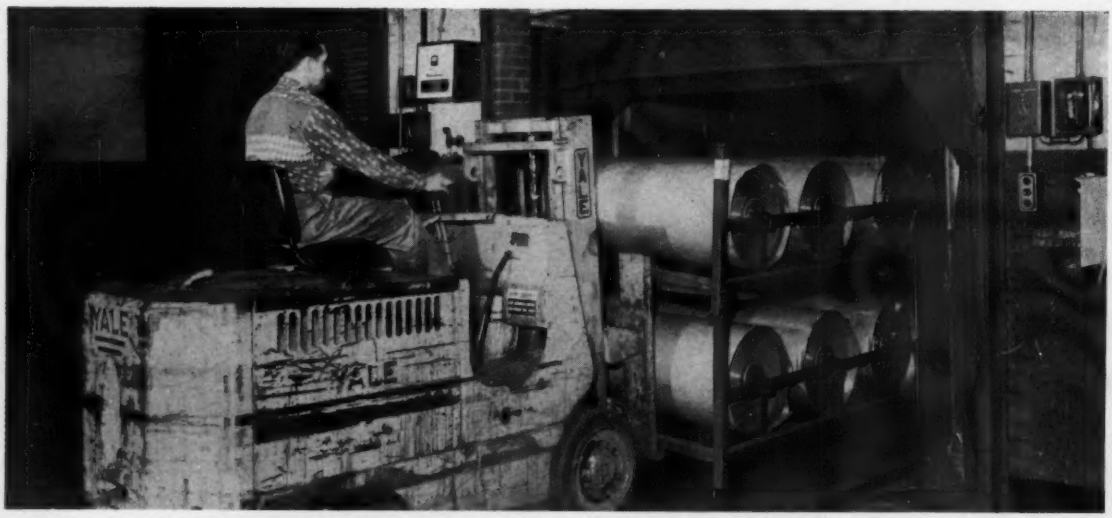
Tube shipments arrive by rail over a spur into the north end of the building. The spur can handle three cars inside the building. Coming in 24-foot lengths, the steel tubing is unloaded by a 5-ton hoist with a mesh sling. Then, the crane moves the heavier sections to storage on the floor slab near the track and to 2-foot-high cradles built up with 4-inch channels.

Since the hoist hook has a 16-foot vertical clearance, the cradles can be tiered five high by crane and tongs and still permit ample headroom. Lighter-gauge tubing is stored in tiered open-end bins further down the center storage area. Both boiler tube and heavy tubing storage area and stainless and structural storage

(Continued on page 104)

Stacking Racks Unitize Roll Handling

- **Carry six rolls of new material where each was formerly handled alone**
- **Allow handling of 20 inspected rolls at a time instead of three**
- **Provide greater protection to materials in storage**
- **Make maximum use of warehouse area**



KEY to high efficiency in inter-plant handling is unit load of six rolls

ALL OF THE ADVANTAGES inherent in a unitized-load material handling system are demonstrated in revised operations of the Masland Duraleather Co. This Philadelphia producer of vinyl upholstery material—both supported and unsupported and for household, hotel, and automotive applications—not only reduced the number of loads which had to be carried frequently but also practically eliminated manual labor in manipulating heavy, awkward rolls of material.

The new system provides for the transport of 24 rolls of raw material between two departments which are a city block apart; allows the handling and storage, as a unit of 20 finished rolls of material; protects goods in storage at all times; fully utilizes the available storage area in the warehouse; and rotates stock regularly so that no material remains warehoused for unnecessarily long periods.

The firm's material handling problems have multiplied as production increased. Essentially, the production consists of calendering rolls of plastic, which are embossed, or printed and embossed. Material is then inspected, placed into storage, and shipped.

The company started with one four-roll plastic calender. Today it has four machines in use and a fifth being installed.

When the entire operation was in the original Plant Number 1, one jumbo-size roll was handled at a time. It consisted of 300 to 400 yards of material, which

was hand trucked from calender to printing or embossing machines. It was then hand-trucked to the inspection department to be cut up into 50-to-60-yard rolls, which were then stood on end, in the stock warehouse, in padded racks.

Maximum storage height was the head of a roll, or 56 inches. Rotation of stock was irregular because it was difficult to move the inner rolls out front, and space, of course, was not used effectively.

When orders came through, rolls were carried by hand truck—three at a time—to the packaging department where they were placed into boxes and shipped.

When the original plant became too small, and it was not possible for the company to obtain the property immediately adjacent to it, a coal yard, one block away, was purchased. And, there, Plant Number 2 was built. The production process then consisted of calendering at Plant Number 1 and finishing the material and shipping it from Plant Number 2. With the additional building, and the aggravated handling problem, it became necessary to revise the handling system from beginning to end.

In the new system, the primary unitizing element is a special stacking-type skid rack in which three rolls of the basic material are carried so that a fork truck handles two racks, or six rolls, per load. To move them between the building, 24 rolls are carried at a time via trailer truck. At Plant Number 2, they are again handled six at a time to the respective machines. When unsupported material is taken to inspection, it is cut into the 50 to 60 yard rolls, boxed immediately and put on stacking racks, 20 rolls per rack, laying horizontally. There is no mixture on a rack. Each contains only one thickness, grain, color, etc. About 1000 different items, in all, are stored. Racks are handled by a high-lift platform truck.

Some Material Stacked on End

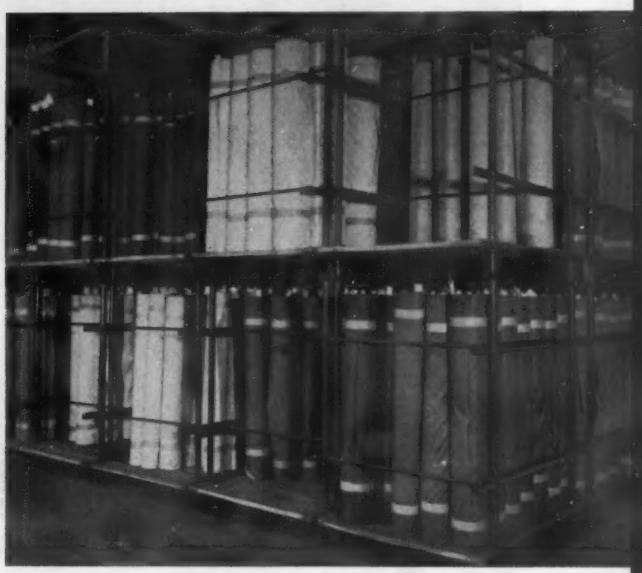
Fabric-backed materials are stacked on end, unboxed. The racks will hold about 30 of the rolls or 20 of the boxes. Racks also have notched side-braces on which supporting bars rest. As a rack is emptied, the bar is backed up to support the remaining rolls. Racks of rolls are stacked two high.

Racks of boxes are stacked three high. The box racks were designed for five-high tiering of containers because of compression on the lower boxes.

In the shipping carton, protection is given to the material by a build-up of corrugated at the end of the box, which build-up supports the roll core that is longer than the roll of material.

Photos courtesy Fred Hill & Son Co. of Philadelphia.

TWENTY ROLLS of boxed material of same type can be stored on skid racks, which are tiered three-high by a stand-up type, high-lift electric platform truck.



THIRTY ROLLS of fabric-backed materials stand on end in stacking skid racks. Notched side braces are adjusted against rolls to hold them as rack is emptied.

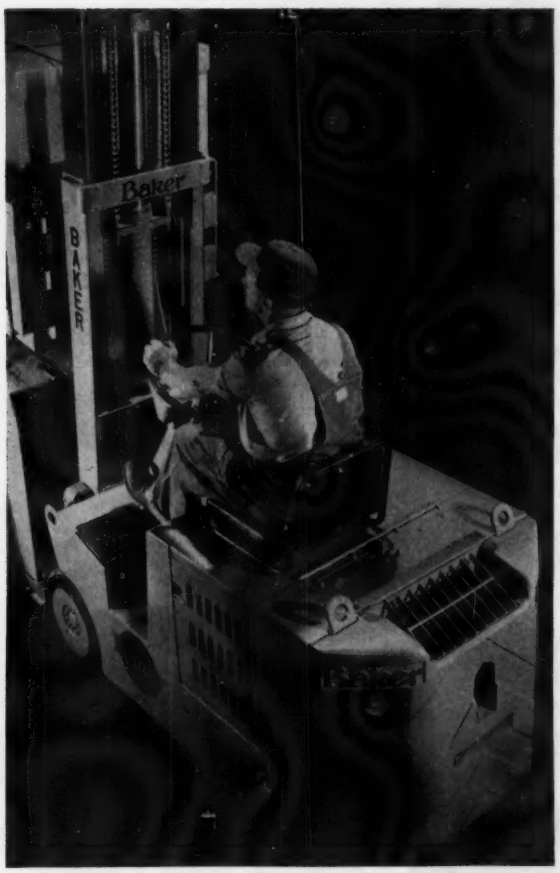
OTIS has greatly expanded the engineering and research facilities of its recently acquired subsidiary, the BAKER-RAULANG COMPANY, Cleveland, Ohio. The product line has been broadened. It now includes a complete range of GAS and ELECTRIC Fork Trucks and an exclusive line of GAS and ELECTRIC side-loading Traveloader® Trucks, also Crane and Platform Trucks. You can now look to OTIS and BAKER for progress in horizontal materials handling.

. . . AN OTIS SUBSIDIARY, IS THE MAKER OF

Baker®

GAS AND ELECTRIC

industrial trucks



Baker's newest gasoline powered fork truck is available in many models, with capacities to 6,000 pounds. It features low initial cost, high lift, plus speed and economies of operation.

The battery-powered fork trucks in the Baker line range in capacity from 1,000 to 15,000 pounds. Baker was a pioneer in materials handling and has been producing electric industrial trucks for more than 35 years.

Circle No. 15 on Reader Service Card for more information

GREATER CAPACITY . . .

(*Continued from page* 82)

Total depreciation, interest, insurance and taxes 18%
Storage area is 0.67 of total warehouse area
Annual cost per square foot of warehouse area $= (.18)(.67)(s)$
$= 0.12(s)$

Pallets are stacked four high. As many pallets are needed for handling, transportation and live storage as for stacking—this leads to the use of factor 2 in pallet costs.
Depreciation 34%, interest 6%, ins. & taxes 2% .....total 42%
Area for each pallet 13 sq. ft.
Annual cost per square foot of warehouse area $=$

$$\frac{(p)(.42)(.67)(4)(2)}{13}$$

$$= 0.176(p)$$

Net effective saving per year .....

$$A0.4(r) - 0.12(s) - 0.176(p) - 450$$

Pay-off period (critical life)

$$\frac{1{,}500}{A0.4(r) - 0.12(s) - 0.176(p) - 150}$$

Sample Calculations:

Calculations have been made and curves drawn for varying values of warehouse rent—using the above formulas for estimating the net effective saving per year and the pay-off period for investment in the attachment. Realistic, assumed values for A, a, r, p, and s are as follows:

A = 10,000 sq. ft.
a = $0.60 per sq ft.
p = $3.50 each
(r) = from 0 to 8 $/sq. ft./year
s = $8.00 per sq. ft.

It is apparent that storage racks covered with sheet metal shelves are a pre-requisite to the use of this attachment. The economic analysis suggests that, in most cases, the cost savings justify the investment in this sheet metal covering for existing racks. And in quite a few cases the saving would even warrant a more extensive change-over from existing methods.

For this new method of stacking, the cycle time per load would be increased slightly. This effect could be expressed as a diminution in the value of 'A', which can be duly allowed for in the cost-savings computations.

Boxcar has only 5′ door, sand piled level, floor rough, yet . . .

Michigan Tractor Shovel unloads entire 60 tons in less than 100 trips

"This was about the toughest boxcar unloading job a tractor shovel could get!" describes this Midwestern foundry's plant engineer.

"The car had a narrow 5-foot Canadian-type single door. Its floor was fairly rough. Its load of 60 tons of silica sand was piled almost level. Frankly, we didn't think our Michigan could unload it, but decided to give it a try."

200 ft cycles in 1 minute

"First thing we noted," says the operator, "was that Michigan's greater bucket capacity, power and instant shift more than made up for whatever slight maneuverability advantage smaller tractor shovels are supposed to have. Turning past the narrow door slowed the Michigan a bit, but I was always able to get in and out of the car without trouble. Loads averaged 10 to 15 cubic feet of sand each. Cycles of 200 feet between unloading point and boxcar took only a minute or two."

Unloads regular cars under 80 trips

Entire job took only 97 trips. Time compared favorably to unloading 50 to 60 tons of sand from a car with 6-foot door. "We receive 15 to 20 of these per week," says the engineer; "Michigan rarely needs more than 75 to 80 trips to unload any of them." Other Michigan assignments include cleaning the foundry floor . . . moving new sand from hoppers to shakeout bin . . . supplying the gray iron moulders.

Expect longer life

"We first noticed this 15 cubic foot Model 12B at a trade show," reveals another company official. "Here we got convincing proof of the longer machine life its planetary axles and torque converter would provide. We also felt its higher lift would make it easier to do some of our loading and unloading."

And less trouble

"Lower repair time was another expected gain," says the general foreman. "We've had Clark fork lifts and industrial trucks for years; they outlast all others by far. When we saw the same ruggedness built into Clark's Michigan Tractor Shovel, we bought it."

See it in action

Study a Michigan first-hand to see how these advantages can pay off *in your plant.* We'll be glad to let your operators run a demonstrator . . . glad to help you measure output on the type of jobs you want to see done. Call your nearest Michigan distributor to arrange details. For his name and address, send a postcard to:

Michigan is a registered trade-mark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division
2445 Pipestone Road
Benton Harbor 6, Michigan

CLARK® EQUIPMENT

Circle No. 25 on Reader Service Card for more information

OVERHEAD TRANSFER BRIDGE . . .

(Continued from page 97)

area are easily reached by the hoists traveling through the transfer points. Stainless steel tubing is boxed to protect its finish.

Order Picking

Order picking also is accomplished with one handling. A picker receives the order from the stock control clerk and proceeds with his hoist to its designated bin while a checker tallies on an adding machine. The picker then straps the order and continues to the outgoing 7-door truck dock at a rate of 125 feet per minute. The load is placed directly onto a waiting truck. Shorter hauls throughout the warehouses are made by a towing tractor and trailers. Also, orders of different types of tubing can be assembled on the trailers and then hauled to the truck dock. To fill orders requiring shorter length tubing, a cut-off area with two band saws and four power hack saws is located just behind the truck bays.

The warehouse operation achieves additional savings by being adapted to pooling. The Franklin Park plant is the home office of a chain that embraces warehouses in Detroit, Indianapolis, St. Louis, Tulsa and Kansas City. Tubing can now be shipped from the mills to Franklin Park, where it can be pooled for reshipment to the other branches.

Warehouse Easily Accessible

The warehouse is located in a traffic-free suburban area close to two arterial highways, permitting uncongested access to the warehouse. In conjunction with the warehouse's 100-foot dock apron, this permits unhampered flow of over-the-road truck traffic.

In addition to these factors, there are other reasons which cause many steel men to consider this facility one of the best tubing warehouses in the country. Not the least of these is high employee morale. Furthermore, clean, pleasant working conditions have attracted high-quality personnel.

GET THIS FREE DEXION CONSTRUCTION GUIDE

Cut your costs with ACME STEEL Dexion Slotted Angle

the Idea framing material for all installations

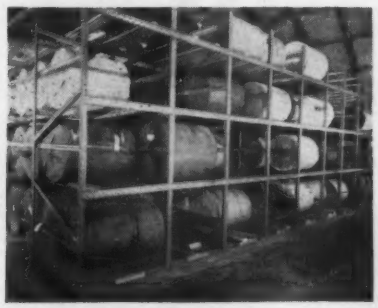
Frame whatever plant equipment you may need, including electrical installations, more easily, quickly and at reduced costs with Acme Steel Dexion Slotted Angle.

Dexion Slotted Angle measures, cuts and bolts together at the job site. Light and compact, Dexion Slotted Angle is packaged in 10-length units, complete with nuts and bolts.

For any kind of framing, Dexion Slotted Angle slot and hole patterns always match up, a special feature whether for custom building storage racks or hanging and installing electrical equipment. And strength factors allow stable, safe frameworks for holding hundreds of pounds. A wrench and the portable Dexion Cutter are the only tools needed. No drilling or welding . . . merely cut and bolt the pieces toge.her to your exact specifications.

Cold-rolled, galvanized steel Dexion Slotted Angle is available in two sizes—standard and heavy duty. And it is completely reusable. A free Idea copy of the "Dexion Construction Guide" is yours for the asking. Just write Dept. FDD-37, Acme Steel Company, Chicago 27, Illinois.

ACME STEEL Dexion Slotted Angle frames tote pan rack for parts storage.



ACME STEEL Heavy-duty Dexion Slotted Angle racks weighty paper rolls.

ACME STEEL Dexion Slotted Angle used for stationary and mobile pallet racks.

ACME STEEL DEXION SLOTTED ANGLE

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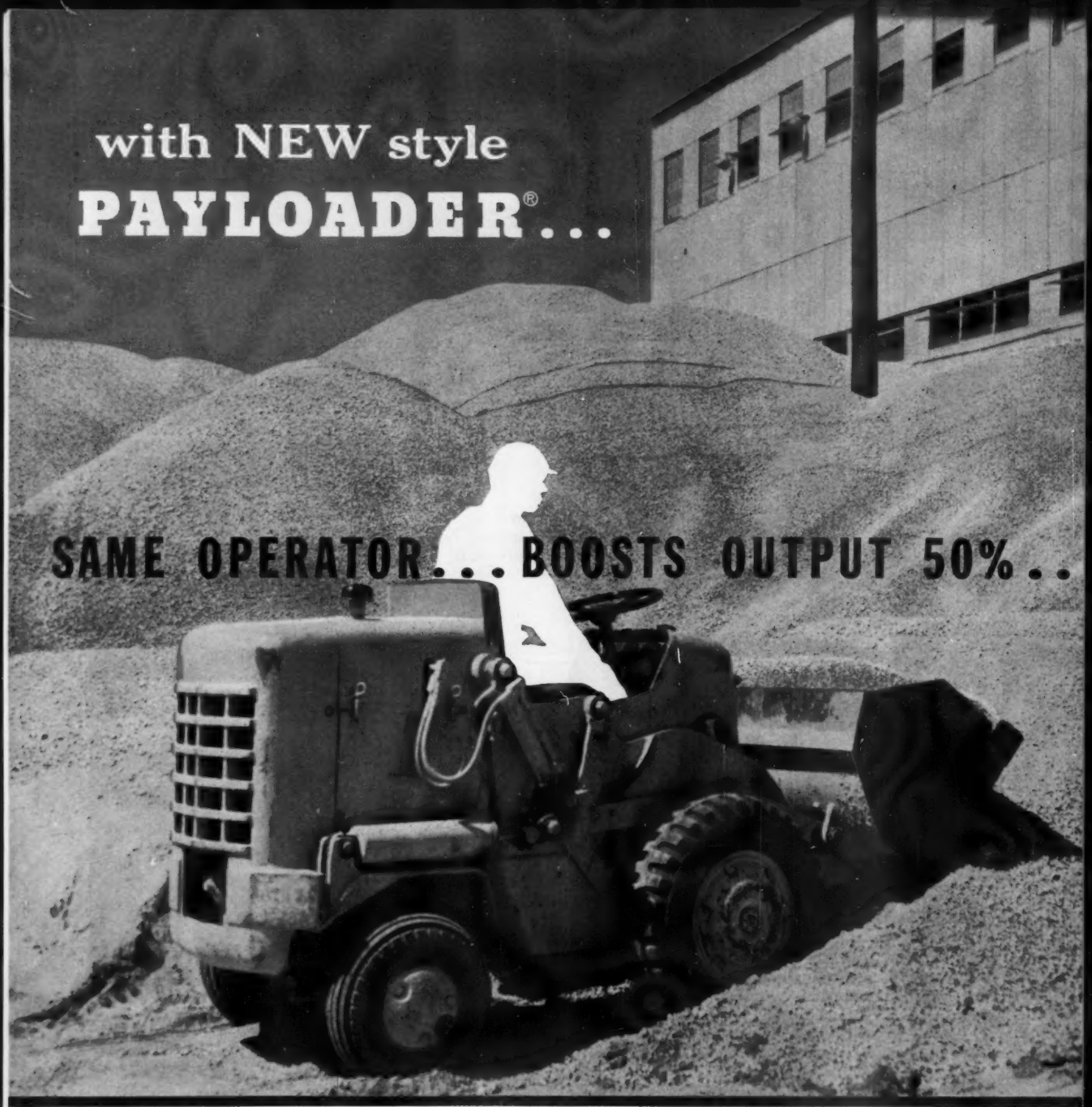

How to keep up with production demand yet hold down production costs in the face of more competitive markets, tighter labor supplies and rising labor costs? . . . One proven solution is to increase output per man by providing your operators with the most modern, most productive machines available. In the field of bulk or loose materials handling, the answer is "PAYLOADER" tractor-shovels. They are built by the pioneer and leader in the tractor-shovel industry and there are *more* "PAYLOADER" units in use than all other makes combined. Industrial plants that have been "PAYLOADER" users for years tell us that it has paid them well to replace older units with the new, more productive "PAYLOADER" models . . . that they not only handle more tonnage than earlier models, but are also way ahead of other tractor-shovels in design and in the features that make them MORE PRODUCTIVE. There is a size and type to meet every need.

Loading and Unloading

Model HA "PAYLOADER" goes in and out of boxcars and trucks to load or unload them fast and at low cost.

Pushing and Towing

Tremendous traction for towing or pushing. Lift of bucket or forks under load adds extra traction on drive wheels.

...and Handles More Jobs!

Feeding Hoppers...Bins

Bucket loads can be dumped high or low as fast or slow as desired with controlled hydraulic power.

Lifting and Carrying

All sorts of package and unit loads can be lifted, carried and delivered where needed — boxes, bales, barrels, drums.

Greater productivity is only half the story of the new style "PAYLOADER" units since they can be readily adapted to do many jobs on either a part-time or full-time basis. Quickly-attached pick-up sweeper, fork-lift, snow plow, and other attachments, plus special buckets are available to further increase their usefulness and make a "PAYLOADER" one of the most versatile and profitable machines any plant can own.

WANT PROOF? ***If you are using a "PAYLOADER" that is more than 2 years old, ask your "PAYLOADER" distributor for a demonstration of the latest model, and see how much more work your operator can turn out — and how much more than with any other comparable size machine. Call him today.***

PAYLOADER®

MANUFACTURED BY

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THE FRANK G. HOUGH CO.

731 Sunnyside Ave., Libertyville, Ill.

Send data on "PAYLOADER" tractor-shovels

- ☐ HA (1¼ cu. ft.), and HAH (1 cu. yd.)
- ☐ Larger models to 2¼ cu. yd.

Name

Title

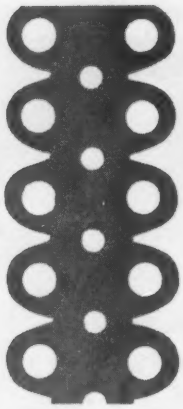
Company

Street

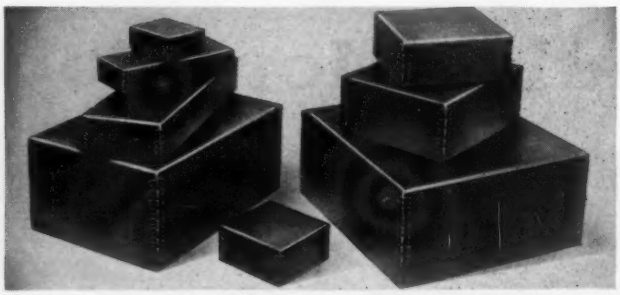
City State

46 Circle No. 73 on Reader Service Card

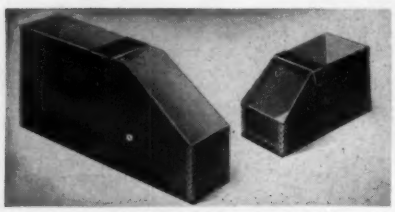
METAL EDGE materials control specialties



- *Lightweight, Sturdy, Grease & Water Resistant*
- *Ideal For Many Industrial Needs*
- *Protect Parts and Components*
- *Help Speed Production Flow*

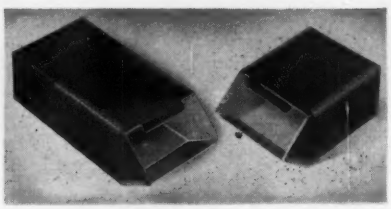


STANDARD STOCK BOXES—Available in a variety of sizes these reusable full-telescope boxes are ideal for storing materials or for use as separate trays.



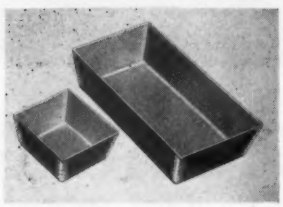
MATERIALS HANDLING DRAWERS

Ideal for bulk storage of small parts on steel shelves. Lightweight, strong and durable. Made with reinforcing strap across top.



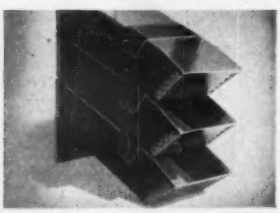
METAL EDGE BIN BOXES

Designed to fit standard steel shelving... convenient for handling and storage of nuts, bolts and other small parts. Made of durable Super Fibre Board with Celolustre treatment. Dustproof type also available.



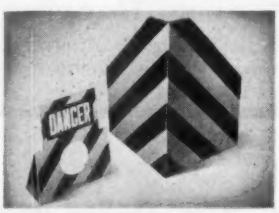
SUPER FIBRE BOARD TOTE TRAYS

For Materials Handling on production lines... assembling orders ... shelf storage. Metal edged for strength... Celolustre coated for grease and moisture resistance.



PRODUCTION LINE HOPPERS

Inexpensive interlocking hoppers hold component parts in 2 or more tiers on assembly lines. Lightweight, sturdy... cut assembly time... reduce labor costs.



WAREHOUSE CORNER MARKERS AND SAFETY SIGNALS

Corner markers clearly indicate and protect stacks of materials. Signals warn of danger indoors and out...on repairs, construction jobs and in assembly areas.

NATIONAL METAL EDGE BOX COMPANY
1202 Callowhill Street
Philadelphia 23, Penna.
Please send Brochure and Price Sheet on your Materials Handling Specialties ☐. Please send your "Packaging Engineer's Check List" ☐.

Name_____
Title_____
Company_____
Address_____
City_____ Zone____ State_____

Send for Brochure and Price Lists on Materials Handling Specialties and Free "Packaging Engineer's Check List." It enables you to evaluate the efficiency of your own packaging system, and may point the way to substantially reduced costs. For your free copy, fill in and return this coupon.

By the Manufacturers of the Engineered Method For Materials Handling, Inventory Control and Packaging

NATIONAL METAL EDGE BOX COMPANY

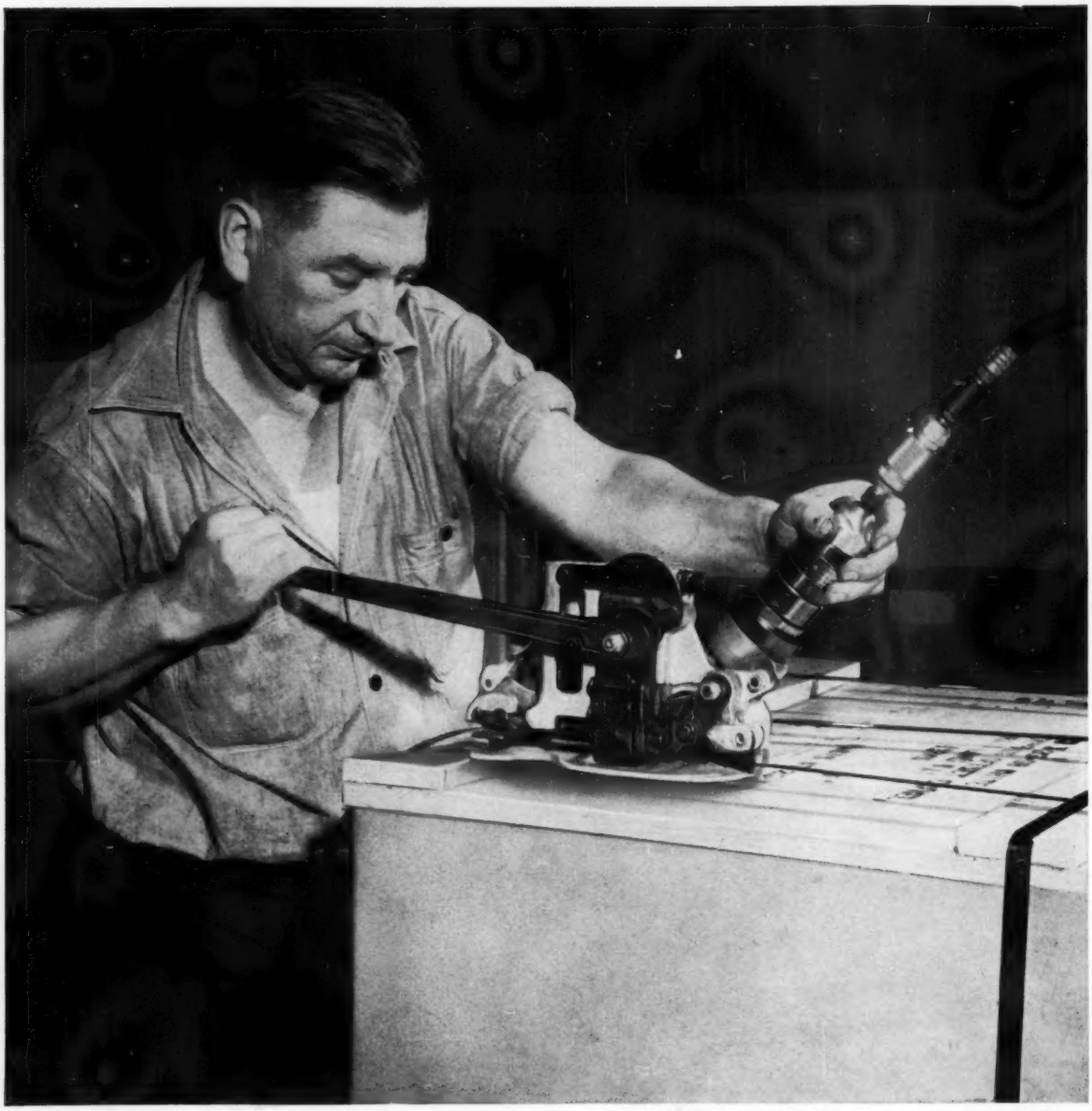
1202 Callowhill Street • Philadelphia 23, Penna.

Circle No. 110 on Reader Service Card for more information

PACKAGING AND SHIPPING SECTION

TABLE OF CONTENTS

PACKAGING ENGINEERING • SHIPPING



Fast new way to apply steel strapping

With this new Signode machine, air power tensions the strapping; then a quick stroke of the handle seals the strap and cuts it off from the coil. No time wasted . . . no strap wasted. The machine is lightweight, portable, has an automatic seal feed magazine. It delivers any preset tension you want, up to 1600 pounds. With plenty of power for fast take-up, it makes strapping even big compressible bundles quick and easy. There's nothing else like it—it's one more way in which Signode can help make your product cost less to handle, store, ship and receive. Let your Signode representative show you. No obligation. Just write:

SIGNODE STEEL STRAPPING CO.

2618 N. Western Avenue, Chicago 47, Ill.

Offices Coast to Coast. Foreign Subsidiaries and Distributors World-wide.
In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

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Simple Air Vent Results in

Blowout-Proof Corrugated Container

AFTER working for years to make its tires and tubes blowout-proof, Dayton Rubber Co. discovered a blowout problem of a different nature. It involved corrugated boxes used for shipping V-belts.

Trouble occurred when the containers, each holding about 350 pounds of V-belts and stacked three high on a pallet, went through the various handlings involved in normal distribution activities. When the loads arrived at the destinations, bottom boxes were often ripped at one corner and contents spilled out.

Tests revealed that the sudden increase in internal air pressure exerted by jolts, caused the boxes to fail at the weakest point, a corner. A small air vent was cut at an off-center point to permit escape of the air in each box. Now, corner blowouts are negligible.

AIR VENTS in corrugated containers act as safety valves. Dale Knox of Dayton Rubber Co. points to simple vent in container at right. It has eliminated blowouts like the one at the corner of the container at Knox's left.

ACME STEEL **STEEL STRAPPING** skid-loads quality printing paper for safe, secure shipment. *(Idea No. S3-19)*

ACME STEEL **STEEL STRAPPING** brings efficient, mechanized handling by unitizing brick. *(Idea No. S3-18)*

ACME STEEL **STEEL STRAPPING** packages hardwood doors for damage-free shipping. *(Idea No. S2-11)*

AIM* for speed and savings

Product protection through Acme Idea packaging can bring you the important benefits of safe, secure packs with increased speed and labor-material economies. Throughout the entire scope of industry Acme Steel Ideas, procedures, tools and materials are speeding and protecting products from production line to end-user. You owe it to yourself to learn how.

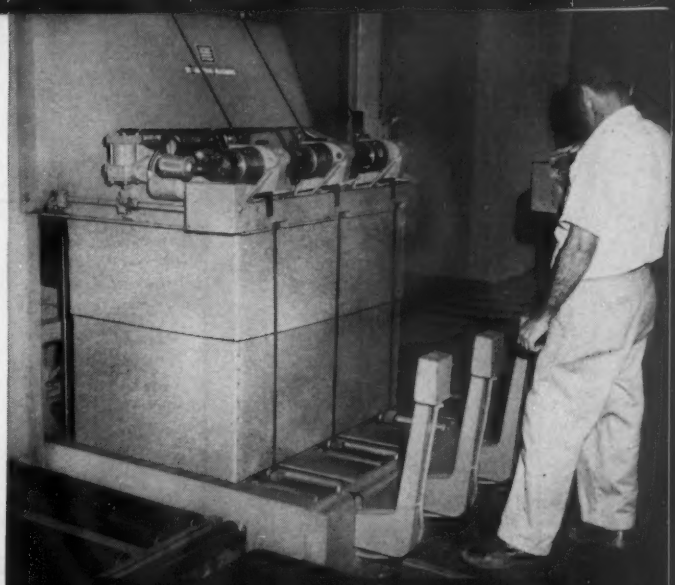
A product protection-wise Acme Idea Man is located near your plant. He is immediately available to discuss your packaging problems and provide you with hundreds of in-use Acme Steel Strapping ideas for better packaging and shipping. The seven ideas shown on these pages are included in the Ideas-In-Action Report files your Acme Idea Man will be pleased to show you. Among the many Ideas-In-Action Reports Acme Steel has developed from the experiences of dozens of industries are sure to be applications that can be applied to your particular operations with important time and dollar benefits to you.

An Acme Idea Man is ready to offer you Ideas-In-Action, plus his training, experience and steel strapping know-how without cost or obligation in any form.

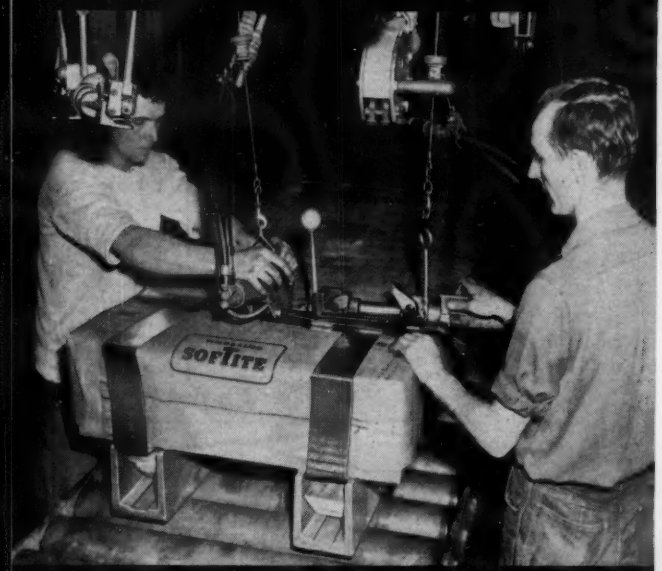
Your *Acme Idea Man can be contacted at the nearest Acme Steel office. Look under "Steel Strapping" in your classified directory, or send the coupon for full information.

ACME STEEL **STEEL STRAPPING**

ACME STEEL **STEEL STRAPPING** reinforces and closes fibre boxes of iron pipe fittings. *(Idea No. S5-3)*



ACME STEEL **STEEL STRAPPING** machine compresses, straps textiles into compact, square bales. *(Idea No. S6-1)*

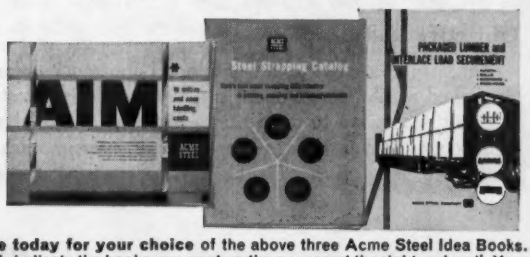


ACME STEEL **STEEL STRAPPING** applied with hydraulic tools speeds sheet steel packaging. *(Idea No. U6-5)*

ACME STEEL **STEEL STRAPPING** machine bundles cartons of cheese for easier handling. *(Idea No. S2-10)*

3 IDEA BOOKS

These three information packed Acme Steel Idea Books are available to you on request. They will provide dozens of clues to better ways to package and protect your products and plant output.



Write today for your choice of the above three Acme Steel Idea Books. Merely indicate the books you want on the coupon at the right and mail. Your request will be filled promptly, with no obligation.

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Chicago 27, Illinois

Please send me the new Acme Steel Idea Books I have checked below:

- ☐ Steel Strapping Catalog
- ☐ Unitizing Catalog
- ☐ Packaged Lumber and Interlace Load Securement
- ☐ Have an Acme Idea Man call.

Name_____

Title_____

Company_____

Address_____

City_____ Zone____ State_____

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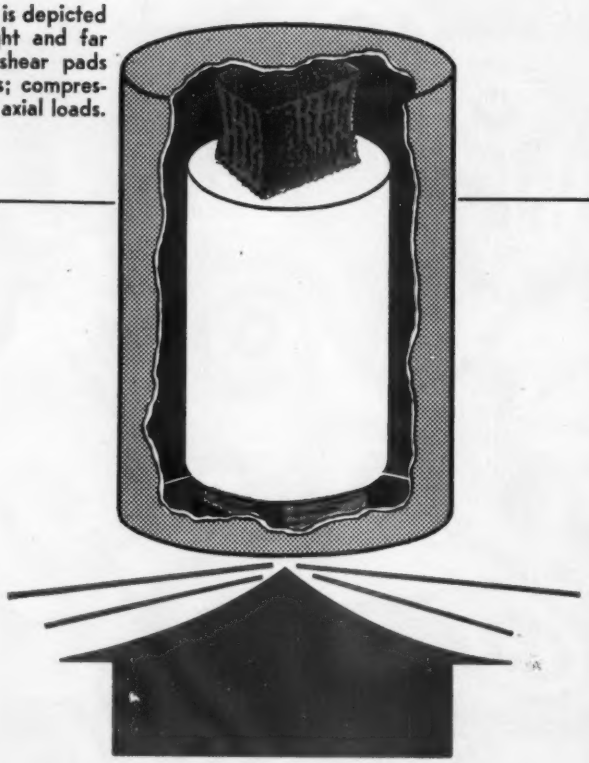
Exploring
The Shear Pad

SHEAR PAD ACTION is depicted in sketches at left, right and far right. Mounts act as shear pads under transverse shocks; compression and tension under axial loads.



SUCCESS for the packaging engineer depends largely upon his determination to make progressive changes. A package which provides adequate protection does not justify a stand-pat attitude. The engineer's goal should be to retain, or improve, product protection while, at the same time, he conducts a continuing attack on the cost of achieving that protection.

The Bureau of Ships of the U. S. Navy recognizes the need for reducing packaging costs and some time ago it investigated the possibility of developing improved cushioning designs for a number of large electron tubes. Container Laboratories, Inc. was assigned the task of investigating several cushioning methods in addition to the coil spring suspension method already in use. To be acceptable, the new method would have to provide substantial savings in costs, weight and cube, without sacrificing protective properties.

After a program of research, designing and testing, Container Laboratories presented the Bureau of Ships with a proposed cushioning concept which would not only meet the cost reduction requirements but would improve protection for the critically fragile tubes. The unique cushioning method is applicable to the packaging of virtually any kind of easily damaged electronic equipment—television sets, instrument panels, testing apparatus, aircraft instruments—and any product where displacement is needed to absorb the energy of shocks.

The new method would completely eliminate the use of coil springs. Instead, it utilizes shock mounts of sponge and foam rubber which, when positioned at opposite ends of a packaged tube, act in shear under transverse shocks and in compression and tension under axial forces. (The tubes are considerably stronger along the axial plane). The method could greatly reduce the amount of necessary cushioning and the overall size of the container.

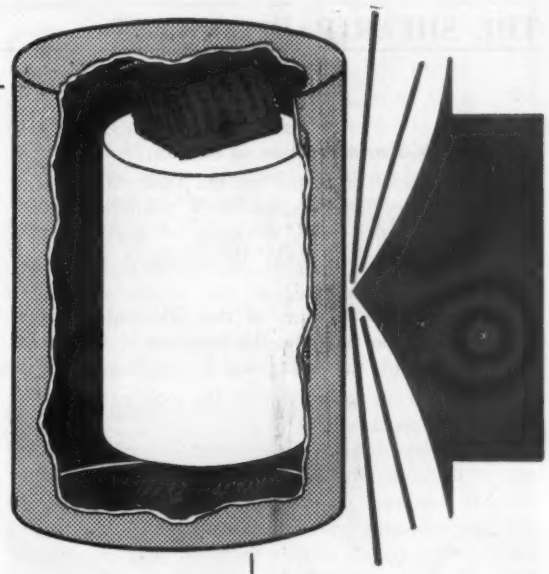
To clearly understand this new cushioning concept as it has been proposed for electron tube packaging, it is necessary to start at the very beginning and to trace each step from the original investigations to the final proposed design.

Objective and Scope

The project assigned to Container Laboratories was described as, "a development program of design, testing and evaluation to determine a simplified, effective and economical method or methods of interior cushioning for six types of tubes". The work was not

Concept

The possibilities for properly designed shear pad cushioning are almost unlimited. This article, prepared from a detailed report of a Bureau of Ships project, describes design considerations which promise big savings in packaging for electron tubes.



conducted for the purpose of developing improved shipping containers. In order that the interior packaging materials or systems which were considered might be subjected to comparative conditions, a single type of exterior container, a fibreboard drum, was utilized for each design.

The tubes selected for the project were considered typical of six packaging Groups in Military Specification MIL-P-75. That specification required an elaborate and costly interior shock-isolation system using coil-spring suspension. Types which were included in the program were:

Tube Type	Group	Approximate Weight (pounds)
857-B	2	3
4J51	6	15
891-R	7	39¾
207	10	2¾
846	11	2
5667	13	27¾

Determination of Tube Fragility

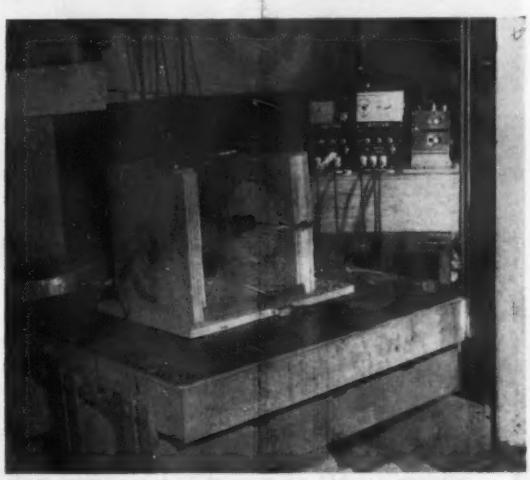
Container Laboratories engineers assumed that an essential prerequisite to good engineering design of shock and vibration isolation systems for any device is quantitative knowledge concerning fragility (G-factor) of the device. Fragility is defined as a composite of the peak value of the velocity change and the time over which this velocity change acts. It was decided that static strength data could not be used without complete knowledge of the natural frequencies of all components of the device being protected.

As might be expected, little or no information on fragility of tubes was available from either the Bureau of Ships or tube manufacturers. Container Laboratories decided that it would have to ascertain experimentally the amount of shock which the various tubes could withstand.

Testing Procedure

Experimental determination of fragility poses problems of: (a) pulse duration and pulse shape; (b) type of tester used and its reproducibility; (c) type of instrumentation used and its frequency response. Commercially available testing equipment was used

(More on next page)



TUBE FRAGILITY was determined through use of a Barry 150 VD medium impact shock machines. Tubes were subjected to increasing impacts until one of three conditions developed: (a) the cathode element fractured or cracked; (b) one or more of the tube elements showed permanent distortion; (c) prolonged electrical contact occurred between the cathode and the grid.

for the tests. Procedure was as follows:

1. Tubes were mounted on the table of a Barry 150VD medium impact shock machine. It was found that a pulse duration of approximately 10 milliseconds could be produced using six penetrators.
2. Accelerometers were of the differential transformer type, having a flat response at 100 cycles per second. Recording was by oscillograph.
3. Tubes were mounted with the long axis parallel to the shock table.

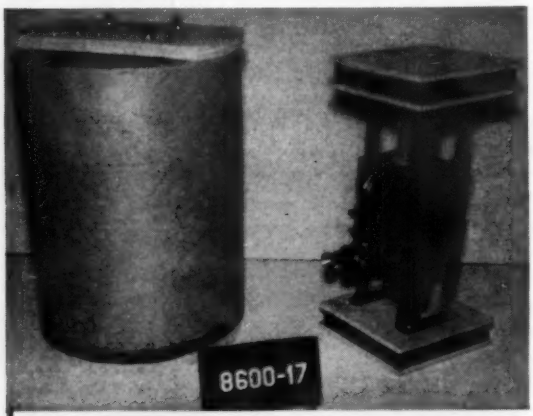
Tubes were dropped from increasing heights until one of three conditions developed: (a) The cathode element fractured or cracked; (b) One or more of the tube elements showed permanent distortion; (c) Prolonged electrical contact occurred between cathode and grid during impact.

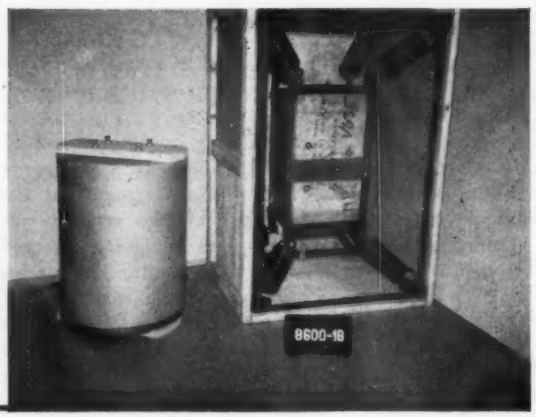
Development of Shock-Isolation Designs

Container Laboratories engineers concluded that in the packaging of military items, which are normally shipped and reshipped many times, certain fundamental design evaluation criteria must be assumed. In the first place, the shock-isolation system should be capable of performing its function many times, even after storage under adverse conditions. Second, the shock-isolation system should require a minimum volume, consistent with protection required, inasmuch as volume has a direct effect on the cost of shipping and warehousing. Third, the shock-isolation system should require minimum weight consistent with protection required, to minimize shipping costs. Finally, insofar as possible, the design should be simple because complexity adds to first cost and increases the probability of human error in packaging under production conditions.

In order to insure development of valid designs, it was necessary to determine certain basic design data concerning the properties of three proposed methods of cushioning which were explored. Those methods were: (a) plastic film used as a suspension device; (b) rubber used as a diaphragm-type suspension; (c) mat-type cushioning used under normal and extreme atmospheric conditions. To insure accuracy of results, a single type of exterior container, a fiberboard drum in accordance with Specification JAN-D-111, was utilized for tests of all types of materials and cushioning methods.

The proposed plastic film suspension system involved placing the tube in a sleeve of plastic, the ends of which were twisted and fastened to ends of the container. To meet low temperature requirements, polyethylene was recommended for the sleeve. Tests showed, however, that the sleeve-suspension system would not be practical for tubes of the weights involved (2-40 pounds) because polyethylene sleeving under a sustained stress would have an unacceptable permanent deformation. At room temperature the required 48-inch drops of these packs resulted in permanent deformation. This became decidedly serious at 150° F.





ANGLE IRON FRAMES are used to support type 4J51 tube (above). Frames are bolted to top and bottom shock mounts and entire assembly is secured within the outer fibre drum. Size comparison (right) of present and proposed methods reveals that tare weight was cut from 79¼ to 15¼ pounds, cubage was cut from 8.25 to 1.24 cubic feet, and cost went down 70%.

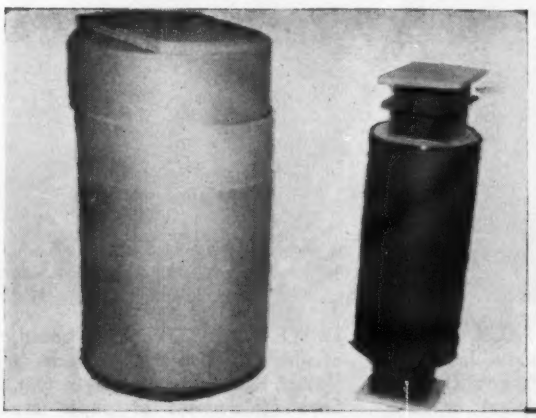
CUBAGE was reduced from 8.69 to 5.00 cubic feet in package for tube type 891-R (left). Tare weight was 43 pounds and was reduced to 35½ pounds. Cost of the shear pad cushioning was less than one-half of the cost of the spring suspension. The tube is positioned with blocking members within an inner fibre container (below) to which sponge rubber mounts are attached. The entire assembly is then secured in fibre drum.

The basic concept of the rubber diaphragm suspension system involved the suspension of a load in a space provided in the center of one or more sheets of rubber. As the suspended mass moves under the influence of transient shock, the diaphragm will stretch, thus acting in tension. Inasmuch as rubber was known to be susceptible to permanent deformation, that was the characteristic most thoroughly investigated by Container Laboratories.

Strips of rubber sheet were loaded in a fashion simulating the sustained stresses which would be encountered in the proposed packaging designs. After conditioning 48 hours at 73°F and 50% R. H. the samples were loaded and stored under the same conditions. Measurements were taken of initial loaded deflection, deflection over a period of several days, immediately after unloading, and one-half and one hour after unloading. Samples were then reloaded and measurements made immediately after reload, after seven additional days, immediately after unloading a second time and three days later.

Results obtained showed appreciable drift under sustained stress and, in some cases, appreciable permanent set. The rubber diaphragm system did not appear to be practical for the heavier tubes since

(Continued on page 132)



SMALL FIBRE CONTAINER holds type 846 tube (left). Sponge rubber shock mounts are affixed to top and bottom of container which is then mounted within large fibre drum. Comparison (above) of spring suspension method, diaphragm suspension method (which was also tested for this tube) and shear pad method shows savings which were achieved in cubage. Tare weights and costs of the shipping unit were also cut.

GIANT BULK PACK is used for shipment of Mack Truck Cab. Photo shows unstrapped empty carton supporting its skidded contents and illustrates great strength of triple wall.

Bulk packs provide . . .

Efficiency in Parts Distribution

EXCEPTIONAL speed of parts handling is a feature of new warehousing facilities at Mack Trucks, Inc., Somerville, N. J. The firm is able to give immediate parts service to its transit trade and 24-hour emergency service to all parts of the country. Much of the credit for that rapid service is due to bulk shipping containers which were adopted recently.

As early as 1950, Mack forsaw the growing necessity for adequate service facilities. To meet that need, it started at that time to plan a 423,000 square foot warehouse to hold 50,000 stock items. Today's facilities are an outgrowth of that forward planning. From the one warehouse, Mack supplies 56 direct-factory branches, 11 divisional depots, 300 distributors and 100 export distributors. In all, approximately 4,250,000 pounds of merchandise are handled per month.

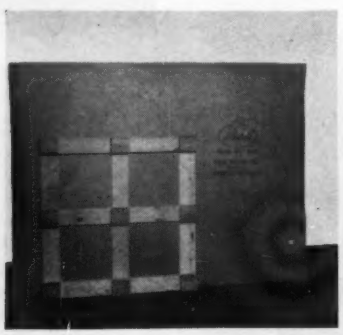
Palletized Container Developed

As standard procedure, individual parts are selected from stock and combined into single shipments to fill orders for the far-flung outlets. Because of a wide difference in quantity and types of parts, (varying from hundreds of types of small parts to large units like Mack Truck cabs) every order must be custom-packed. Thus, standardization of shipping containers for all orders is difficult to achieve.

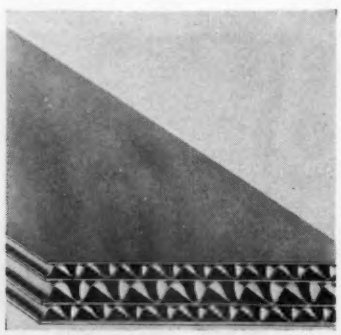
Prior to the move into the new building, packaging

(Continued on page 174)

PARTS PACK measures 36" x 36" x 30" and combines a variety of items into a single unit for shipment to company factory branches, depots and Mack distributors.



KNOCKED DOWN PACK, as it is received by Mack Trucks, Inc., requires little storage space. It can be re-used by recipient or returned to the central warehouse.



TRIPLE WALL corrugated board, of which the bulk pack is made, is 1/2 inch thick and extremely strong. Seven thicknesses of paper are used in its durable construction.

the Lowest Price in Carton-Closing History!

the Really Modern Way to Close Cartons
... with Staples ... from the Outside, After They're Filled!

International HAND BOXER

Everything you want in up-to-date carton closing: *SPEED!* Hundreds of cartons per hour—filled, neatly stapled from the outside and ready for delivery ... *STRENGTH!* Can't "pop" open, discourages pilferage, meets Rule 41 requirements ... *ECONOMY!* You won't waste material, or carton set-up space, or time waiting for glue to dry ... *FLEXIBILITY!* It's portable. Carry it to the carton. Ideal as standby or overload equipment right in the production area.

The INTERNATIONAL Hand Boxer is the *only Staple Carton Closing Machine* on the market with built-in penetration control and clinch control—and designed for convenient one-hand control—*FOR LESS THAN* $50.00! See your International Man soon for a revealing demonstration.

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INTERNATIONAL STAPLE & MACHINE COMPANY

Originators of Carton Closing Staplers

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Circle No. 83 on Reader Service Card for more information

by Elmer A. Kruse
Supervisor of Packaging Specifications
Wagner Electric Corp.

Cost-Conscious . . . does more than

Last month, Kruse explained why the packaging department at Wagner Electric Corp. became cost-conscious. He illustrated beneficial results the new approach had on handling of packaging materials. This month he discusses advancements which Wagner has made in package design and application of new machinery.

Part II

OUR cost-conscious approach to packaging problems revealed that some great strides have been made in the development of machinery for packaging. By investing in new machines, in certain instances, we were able to reduce our costs substantially.

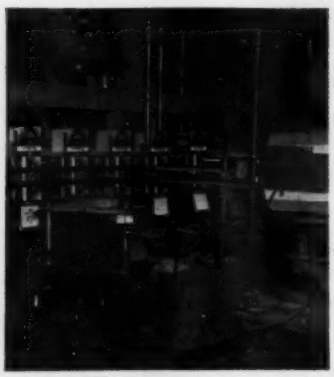
Many of the parts which we manufacture, wheel cylinders for example, are packaged for shipment in sealed-end folding cartons. Our former method of packaging wheel cylinders required considerable manual operations. Packagers had to break open and fold in place the three bottom flaps, insert the part being packaged and set the carton on a conveyor which carried it into a gluing mechanism. Our maximum production, using five people, was 9000 boxes per day.

To cut our packaging costs in this area we set out to find a machine which would do the following:

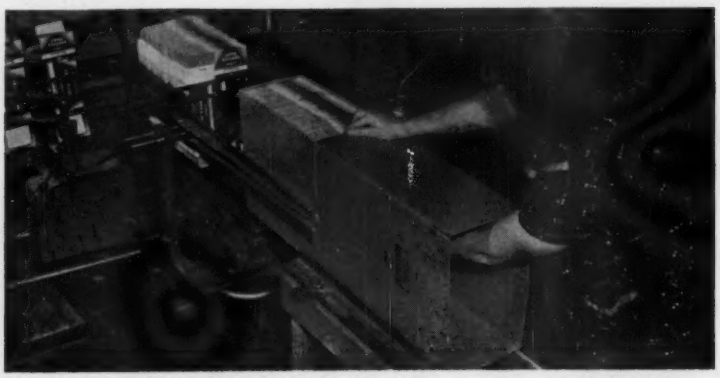
1. Set up the cartons automatically.
2. Print the part number on each carton.
3. Carry the opened carton past a point where the item could be dropped in.
4. Apply glue, seal the carton and discharge onto a packing table.
5. Adjust to at least three different sizes.
6. Increase packaging output.

We found the machine we wanted and bought it. It is equipped with a two-speed motor and variable speed drive to give production rates of from 0 to 80 per minute. It has a loading magazine which will hold 500 cartons. It automatically sets-up and squares-up cartons, folding the three bottom flaps into place. An interesting feature is that it allows the last flap to remain dangling as a carton moves through the machine. The purpose is to insure proper positioning of the flap for an imprinting operation which follows.

Two sets of switches control the machine, one for the machine itself and the other for the loading maga-



CARTON SET-UP is automatic operation with new machine installed at Wagner Electric Corp. Magazine at right holds 500 cartons. Machine squares up cartons and folds three bottom flaps into place. The fourth flap goes through printer.



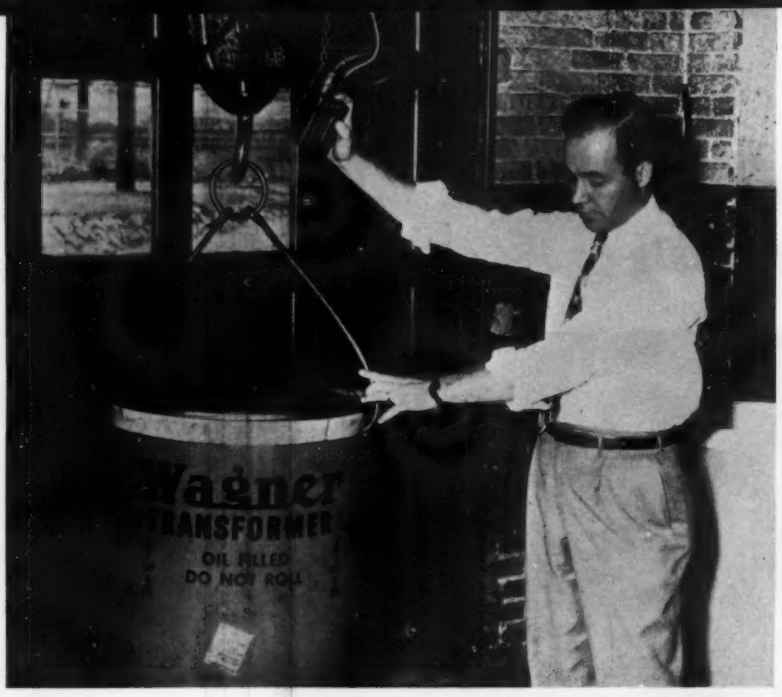
MATCHBOX-TYPE CONTAINER has solved a problem in loading magazine of carton folding section of machine. Carton supplier ships to Wagner Electric in these containers. To load magazine, operator places complete package on table at open end of magazine. Inner jacket, containing 350 cartons, is pushed directly into the magazine. The inner jacket is then lifted out of the magazine and the cartons remain in place ready to be fed into folding section. The job is assigned to one of two packers at end of line.

Packaging
cut packaging costs

HYDRAULIC LIFT helps reduce the load in the filling operation. As skid load is emptied, lift raises it to constant working height. To insure smooth flow of parts to the lift, a tilted section of roller conveyor holds next skid-load of parts. Foot lever releases skid to lift.

U-SHAPED CONVEYOR carries filled cartons from filling station to sealing section of machine. Two-speed motor permits slow-speed operations when only one person is filling cartons. Machine has two sets of switches, one to control machine itself and the other to control magazine feed. That makes it possible to empty machine of one part without emptying magazine.

REVOLVING TABLE provides flexibility at discharge end of filling machine. The table accumulates filled cartons which are to be packed in shipping cases. Time studies revealed that 1½ packers could easily keep up with output of machine. One packer is charged with the added duty of loading carton magazine. While she is away from her post, table accumulates packages.



TRANSFORMER PACKAGE has cut costs of packaging and handling at Wagner Electric. Old type container offered little protection against entry of dirt and other damaging objects. Packaging costs were high. The container which answered the problems was an eight-ply fibre drum fitted with a special cover and unique closure device. The drum can be handled individually by hand truck or by overhead hoist, using pre-drilled holes for insertion of hooks. Because of stability and strength, drums may be palletized for handling and stacking by fork truck. More than 30,000 units have been shipped in this manner with no reports of damage to transformers at point of receipt. Savings of 25% in storage space have been made as a result.

PACKAGING SEQUENCE for transformers is as follows: (1) Transformer is lifted by hoist at end of assembly line and lowered into drum. Fibre sleeves are used for additional bracing; (2) Mounting brackets of the transformer are bolted to side of drum; (3) View of interior of pack before cover goes on reveals that the transformer floats away from sides of drum and that it is secured by two mounting brackets; (4) Cover is secured onto the drum with four spring clips which are quickly installed by a blow of a hammer. The clips add strength to metal band at top for overhead handling.

zine. This makes it possible to empty the machine of any given part without emptying the magazine. Also, if either of the two operators is away from the machine for any length of time, it can be shifted to half-speed and one operator can continue without added strain.

In the filling operation we have applied good handling techniques to reduce the load. Skid-loads of parts (in wooden trays stacked several high) are delivered by fork truck to packing stations. A unique arrangement of a tilted roller conveyor and hydraulic lift takes all the strain out of moving the parts into position. The lift, spotted adjacent to the filling station, can be raised or lowered to keep the work at the proper level. While one skid is on the lift, another skids waits on the roller conveyor. After the first skid has been emptied, it is removed and the lift is lowered to floor level. A foot lever is depressed to release the waiting skid from the roller conveyor to the lift.

The advantages of this unique arrangement, with respect to material handling activities, are obvious. One fork truck is able to supply several packaging lines and still have enough free time for other tasks. The truck keeps operating steadily and it need not waste time waiting with a pallet-load of parts to replace one being emptied at the filling station.

Speed and efficiency of the new filling operation are considerably greater than the old method. Production was formerly 9000 units per day with five people—now it is approximately 28,000 per day with only four people. Total investment in the new machinery was approximately $18,000. It paid for itself in eight months.

Our investigations of filling costs led us to some important minor changes too. For example, we were not satisfied with the method of loading cartons into the magazine of the machine discussed above. Our answer to that problem was to arrange to have our cartons supplied to us in match-box type shipping containers which we call "cartridge packs". The pack consists of a corrugated inner jacket, which is open along the two narrow sides, and a corrugated outer sleeve which is open at the ends. To load the magazine of a filling machine, a full cartridge pack is placed on its side at the open end of the magazine. The inner jacket, containing 350 cartons, is pushed out of the outer sleeve and directly into the magazine. The inner jacket is then lifted out of the magazine and the cartons remain in place ready to be fed automatically into the folding section of the machine.

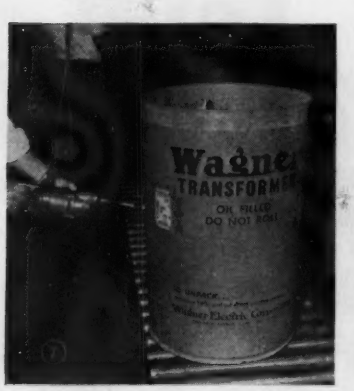
The advantages of cost-conscious packaging have not been restricted to high-speed lines for packaging of relatively small parts. We have made profitable changes in the packaging of heavier items involving entirely different problems. A good example is the shipping container for transformers which range in weight from 200 to 300 pounds.

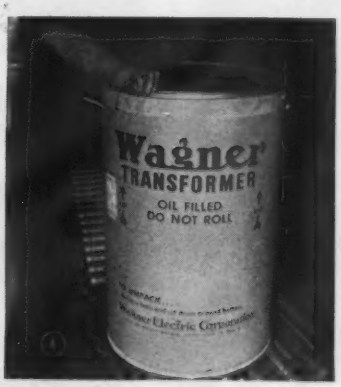
Old Container Analyzed

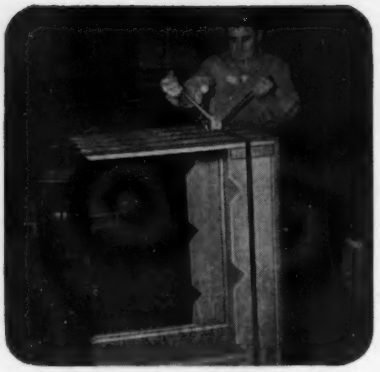
When we analyzed the old container used for packaging these transformers we found that it did not offer adequate protection against entry of dirt, dust and other damaging objects. Units might arrive at their destinations with chipped paint or even broken insulators. Because of an open type construction there was little space for identification marks or advertising messages. Finally, and of extremely great importance, packaging costs were high.

The container which answered this problem was an 8-ply fibre drum fitted with a special cover and closure that completely protects transformers from dirt, grease, weather and other damaging conditions while they are in transit or storage. Most of the credit for the development can be given to James R. Hollis, supervisor of package design and development at our Plymouth Ave. plant. (Hollis' idea was awarded a second prize in the 11th National Championship Competition in Packaging and Material Handling, sponsored last October by the Society of Industrial Pack-

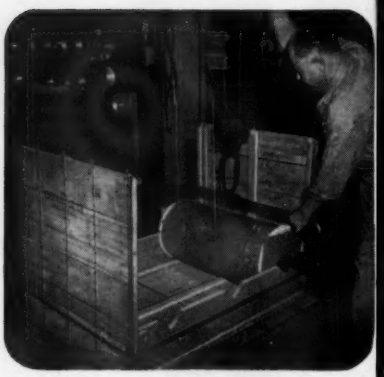
(Continued on page 176)





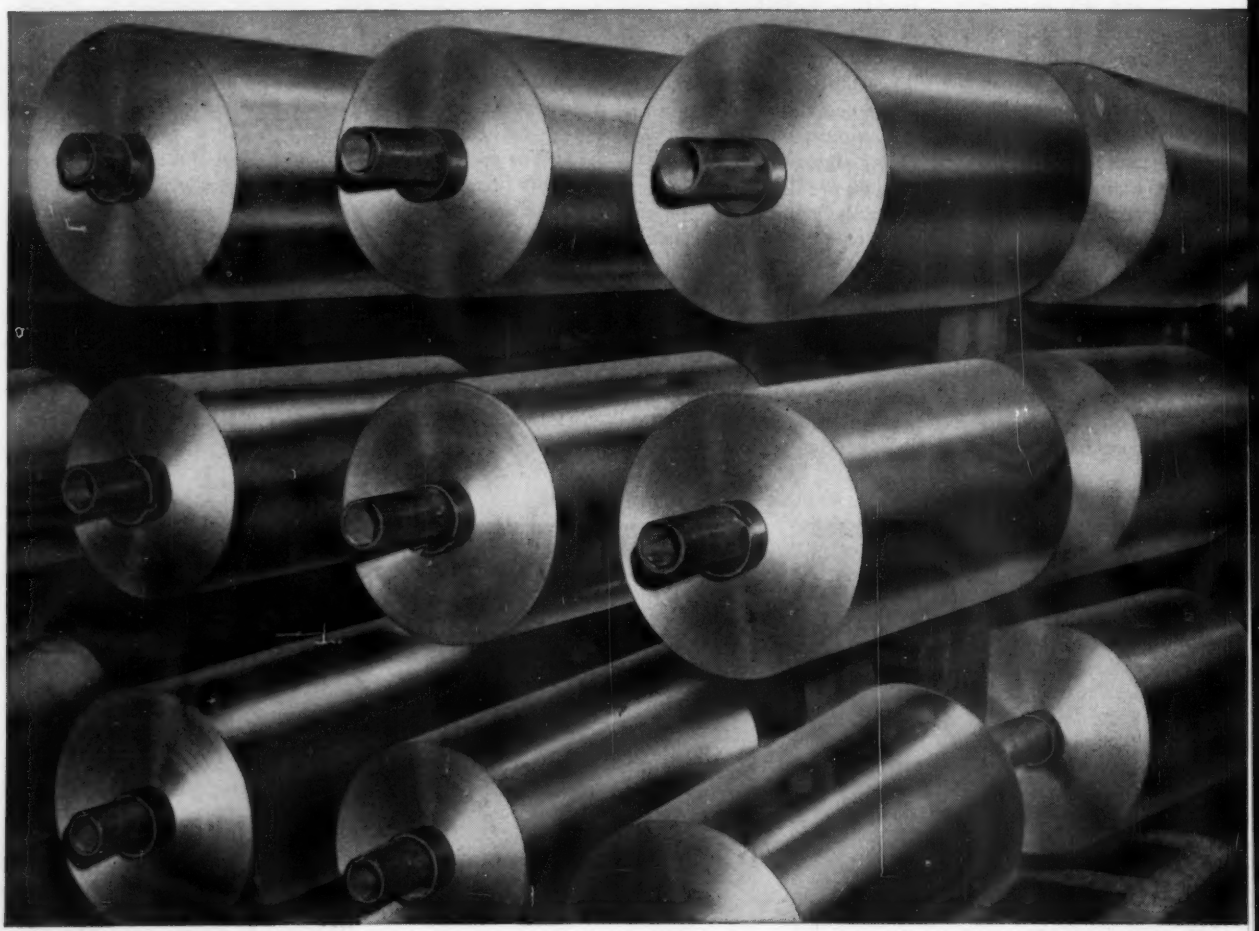


1 Wirebound blank wraps around V-notched end pieces and is strapped in place to form sides of box.



2 Roll is brought from rack, gets end-pads and spacers, is lowered to position. Notches support rolls.

300-pound rolls of easily damaged handled and shipped in General



3 With first tier of rolls in place, pre-notched upper panels are set between double rows of side cleats.

4 After second tier is loaded, top end pieces are positioned. Rolls don't touch each other or sides, bottom or top of box.

5 Double cleats of cover fit snugly over end pieces. Rock Fastener loops are engaged and closed with hammer blow.

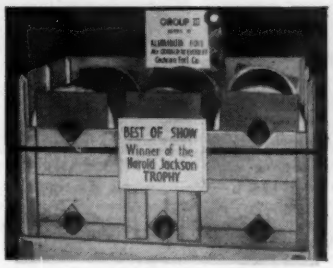
aluminum foil packed, engineered wirebounds

These big rolls of aluminum foil are so easily damaged in handling and shipping that product protection is a prime requisite of their container. This, plus the weight and shape of the rolls, made all former containers costly, hard to handle, and slow to pack and unpack.

The ingenious new wirebounds developed at Cochran Foil Co., Louisville, Ky., in cooperation with General Box package designers, are lighter, stronger, less costly, and permit a packing method that offers many advantages to shipper and receiver. Damage complaints have been eliminated. Over-all packing costs have been cut virtually in half.

The picture sequence tells the packing story. Six men pack two 6-roll containers in ten minutes, including all tickets and paper work. The receiver can stack the containers in storage, unpack them a roll at a time by removing the cover and end blocking pieces. A mandrel takes each roll out as needed.

General container design service includes the facilities of two fully equipped testing laboratories. This service has solved many a tough packaging problem... has cut packing, handling and shipping costs for almost every kind of product. Find out how much General Box can do for you. Just let us send a man. No obligation.



The champ! Best of show at the National Industrial Packaging Competition, St. Louis, October, 1956. This is the eighth consecutive year that a General Box design has won first place in the wirebound class, and this is the second that went on to win the Harold Jackson trophy as Best of Show.

6 Steel strapping completes box, which now weighs about 2000 pounds, protects rolls, stacks four-high safely.

Bonus Benefits

Important freight savings from reduced tare weight.

Container savings from lower first cost and from frequent re-use of containers returned knocked down.

Elimination of Cochran box shop frees valuable space, reduces inventory costs, ends scheduling problems.

Containers received KD in unit loads save space, permit fast, accurate inventory.

Customers like fast unpacking, ease of handling, being able to store and stack partly empty containers.

Quantities of four, six or eight rolls in widths from 20 inches to 37½ inches handled by only five mat sizes, two end-piece sizes, four pallet sizes.

General Box

1847 Miner Street, Des Plaines, Ill.

★ ★ ★ ★ ★

Factories: Cincinnati; Denville, N. J.; East St. Louis; Detroit; Kansas City; Louisville; Milwaukee; Sheboygan; Winchendon, Mass.; General Box Company of Mississippi, Meridian, Miss.; Continental Box Company, Inc., Houston.

Engineered Containers for Every Shipping Need
Wirebound Crates and Boxes
Generalift® Pallet Boxes • Corrugated Boxes
Stitched Panel Crates • All-Bound Boxes

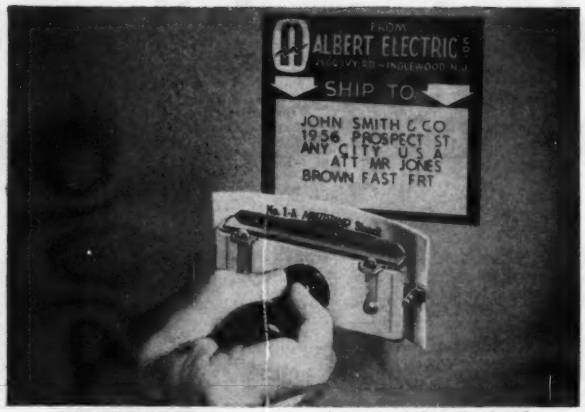
The ORIGINAL Hand Stamp Stencil Duplicator

MULTISTAMP
STENCIL DUPLICATOR

Manufactured only by The MULTISTAMP Company : Norfolk, Virginia

Quick Accurate Way to Mark Cartons
PRINT DIRECT

PRINT DIRECT! Now . . print shipping form and identification data directly on cartons. FORM-CUT* stencil has facsimile of your own label or shipping form die-impressed into the stencil. No. 3 Multistamp duplicator shown in use above, complete outfit, $19.50. Write for sample FORM-CUT stencil and imprint.



PRINT DIRECT! Now . . save the cost of shipping labels and of attaching labels to cartons. Address 1,000 or more cartons from one low-cost stencil without re-inking. Model 1A shown in use above, complete outfits, $12.50. Also available in smaller size, Model No. 1 outfit, $9.50.

The MULTISTAMP* Hand Stamp Stencil Duplicator eliminates double operation of preparing labels and then pasting them on the containers. Prints shipping data direct on cartons, boxes, packages. Handy as a rubber stamp . . fully portable, non-mechanical, no moving parts to wear. Get 1,000 or more clear sharp impressions from one typewritten or handwritten inexpensive stencil without re-inking. In photo at right above, shipper's name, address and "Ship To" label frame were pre-printed by carton manufacturer.

There is a size for every duplicating need. 8 complete outfits, $9.50 to $99.50, f.o.b. factory. Write for descriptive literature or see your Office or Shipping Room Supply Dealer. The popular "No. 3" outfit, pictured above, is of suitable size for printing postcards and large shipping tags; and includes the duplicator, 12 stencils, ink, ink brush, writing board, stylus pen, type cleaner, correction varnish and complete illustrated instructions in a handy durable case . . . $19.50.

*REGISTERED TRADE MARK ©1957, M. C.

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...you can choose bag closing machines from the new, and augmented

BAGPAK® *Closer line*

New models geared to your production, cost and sales requirements. New Low Price range based on unique specialized designs for specific bag sealing needs and elimination of unnecessary "extras"

Now you may choose almost any combination of Bagpak® Closers to team up with filling and weighing machines you may already have.

- **ADAPTABLE TO ANY PRODUCT—ANY INDUSTRY**
- **HIGH OR LOW SPEED**
- **WITH OR WITHOUT CONVEYORS**
- **FULLY OR SEMI-AUTOMATIC**
- **FOR VARIABLE OR SAME-SIZE BAGS**
- **FOR VARIABLE OR ONE STYLE OF CLOSURES**

Bagpak's planning and service engineers will give you full benefit of all their experience with the latest and best bag filling and closing techniques.

All this adds up to lower costs, faster production, uniform, better-looking packaging, more efficient labor, faster undamaged deliveries. Call for Bagpak Planning Service — or write Dept. FL3.

See our complete line of Bagpak® Closers in action at the AMA Packaging Show, Booth #906, April 8-9-10-11, Chicago Amphitheatre.

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How Much Is

hidden damage

Costing You In Cash, Time, Trouble And Good Will?

You can't afford to play hide and seek with damage! Just imagine the total time loss resulting from delivery of a damaged product . . . the additional complications and costs and, most of all, the loss of your customer's good will. These are all very real factors in your total packing, handling and shipping costs . . . factors that can't be ignored on the balance sheet.

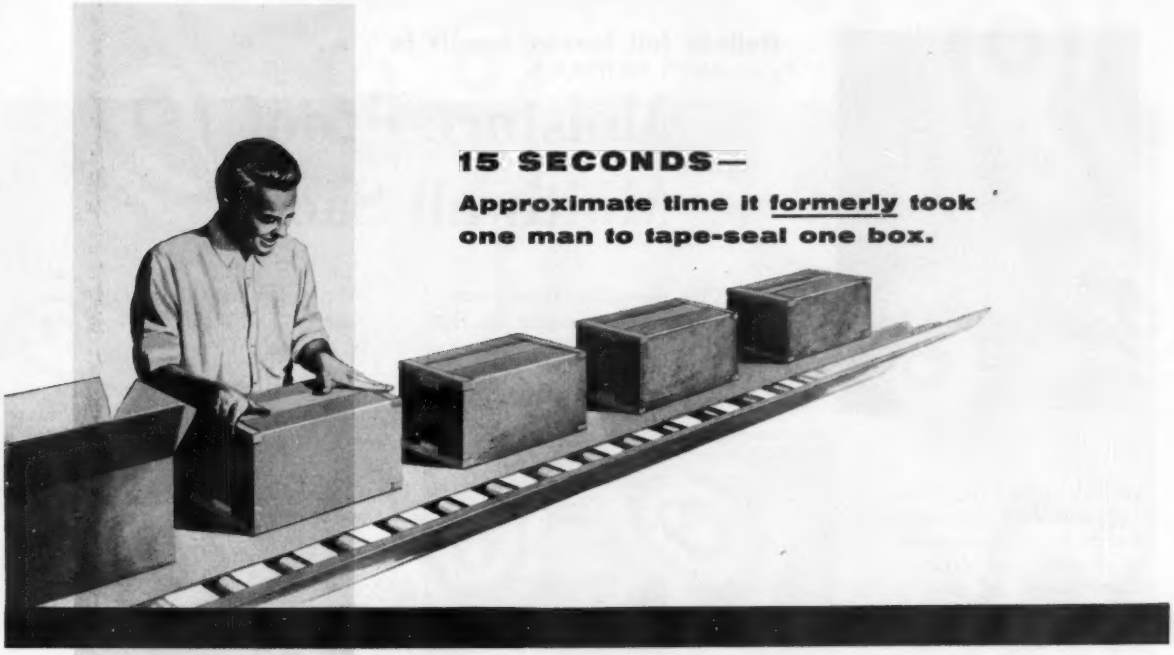
You can eliminate embarrassment and expense by packing your product in a tough, protective "see through" Wirebound Crate that allows fast, easy inspection at any time. Investigate Wirebounds for lower cost, safe packing, handling and shipping. Write for the informative booklet "What to Expect From Wirebounds," better yet, talk over your requirements with a Wirebound Sales Engineer. Write us for either the book or the man.

Product visibility eliminates Hidden Damage

Write for the Book or the Man.

Wirebound
BOXES & CRATES

WIREBOUND BOX MANUFACTURERS ASSOCIATION
Room 1171, 327 South LaSalle Street, Chicago 4, Illinois



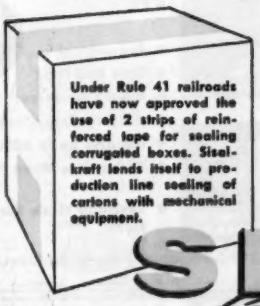
15 SECONDS—

Approximate time it formerly took one man to tape-seal one box.

5 SECONDS—

Approximate time it now takes with Sisalkraft Center-Seam Sealing.

Save 2/3 on Sealing Time!



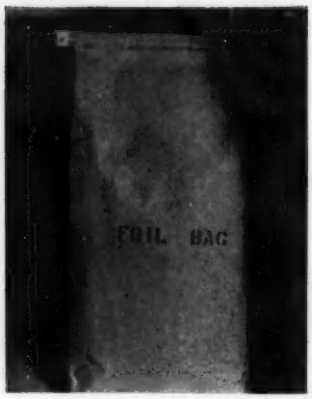
Under Rule 41 railroads have now approved the use of 2 strips of reinforced tape for sealing corrugated boxes. Sisalkraft lends itself to production line sealing of cartons with mechanical equipment.

Write for more facts about the labor saving uses of Sisalkraft reinforced tape and nearest source of supply. AMERICAN SISALKRAFT CORPORATION, Attleboro, Mass. Makers of sealing tape stock for the Gummed Paper Industry.

SISALKRAFT

Reinforced **SEALING TAPE**

Circle No. 11 on Reader Service Card for more information



Built-in foil barrier results in . . .

Moisture-Proof Multiwall Sack

After more than three years of testing and experimentation, Hudson Pulp and Paper Corp. has succeeded in producing multiwall sacks which have aluminum foil barriers laminated into kraft walls. Named "Foil-Wall", the new sack is said to offer:

1. Moisture-Vapor Protection—Lowest moisture permeability of any barrier yet devised, with a rate of moisture vapor transmission so slight as to be almost impossible to measure.

2. Odor and Gas Resistance—Securely and completely blocks the odor of contents from seeping through the other plies. Also prevents outside odors or gases from being absorbed into the bag itself.

The sack is recommended for shipping chemicals, foods and plastics in the hygroscopic, deliquescent and anhydrous groups.

IMPERVIOUS TO WATER. Foil-Wall sack withstands heavy downpower in shower stall (above). Construction of plies is shown at right. New sack is part of Hudson's standard multiwall sack line.

Circle No. 310 on Reader Service Card for more information

Another Plus . . . from Brainard

PROGRESS: A better tensional stretcher to speed up your strapping operation

For complete information on the PNE Stretcher or any one of those 378 items mentioned above, write . . .

This new air-powered PNE Stretcher brings "production line" efficiency to packaging applications using any size of tensional strapping. It provides unlimited take up at predetermined tensions. Thus operator fatigue is reduced and tensioning errors are considerably lessened. A PNE Stretcher is available for every tensional width, and each tool adjusts to all gauges in the width it handles.

A continuing program of improvement and development of strapping materials and equipment is an established policy with Brainard. For example, the Brainard strapping line includes over 378 items to provide you with the finest available modern strapping facilities. A Brainard-trained Sales Engineer is on call in every major city to help develop maximum efficiency in your strapping operation.

Brainard Steel Strapping

SHARONSTEEL

Brainard Steel Division, Sharon Steel Corporation
Griswold Street, Warren, Ohio

221

Circle No. 184 on Reader Service Card for more information

SHEAR PAD . . .

(*Continued from page* 117)

the rubber would be highly stressed, particularly if the container were in a vertical position. Permanent set and yielding would probably ensue in storage and shipment. Also, because the material acts as a tension spring, considerable additional axial length would be required, increasing the cubage of the container. It was determined, however, that the system offered possibilities for lighter weight tubes.

Many types of mat-type cushioning materials were investigated. Tests included a study of the load-deflection characteristics of the materials after repeated loadings, after exposure at —30°F and 10-15% R. H., at normal atmospheric conditions, and after prolonged exposure at 150°F and 70-80% R. H. Under those conditions load-deflection characteristics were determined at periodic intervals for six to thirteen weeks.

Five samples of each material were subjected to the same series of tests. It was finally determined that those least affected by repeated loadings and extremes of temperature and humidity were the solid foam latex and sponge rubber materials.

Tests and calculations indicated that the mat-type cushioning materials, when used in the conventional manner (where the item is completed surrounded), would result in packs with relatively high cubages. Only two of the tubes could be accommodated inside the 23-inch maximum diameter of existing commercially available fiber drums which were used as test containers. In addition, the resulting weight and cost of the cushioning materials would be quite high.

Shear Pad Method Investigated

None of the cushioning methods which had been investigated seemed to provide a sure solution. Therefore, attention was focused on the possibility of making soft shock mounts from sponge and foam rubber. Experiments showed that sponge and foam rubber can

How A. O. Smith Corporation makes a "Diagonal Tie" with USS GERRARD Round Steel Strapping

This unique diagonal tying method was designed by the Plant Superintendent of the Welding Products Division, A. O. Smith Corporation, Milwaukee, Wisconsin, in cooperation with a USS Gerrard sales representative.

Intricate-looking enough to be nicknamed the "Diagonal Tie," the method is actually very simple and has proved ideal for securing corrugated boxes of welding electrodes. The USS Gerrard Round Steel Strapping not only acts as a perfect closure but reinforces the box so that it will not tear when one end is lifted. In addition to preventing box damage and lost pieces, the "Diagonal Tie" makes a very favorable impression on customers.

The "Diagonal Tie" is made on the Gerrard Model Q Semi-Automatic Machine. A. O. Smith's Welding Products Division has been using USS Gerrard Steel Strapping for over ten years.

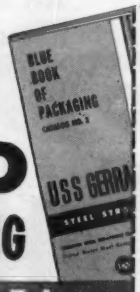
You, too, can receive the time- and money-saving advantages that USS Gerrard has to offer. No matter what your packaging-shipping problem is, we'll come up with a practical solution. Contact a USS Gerrard Sales representative for any help you need.

THE DIAGONAL TIE

GERRARD STEEL STRAPPING DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: CHICAGO, ILLINOIS

NEW CATALOG—HOT OFF THE PRESS!

36 pages of photographs, description, facts and figures on all USS GERRARD Steel Strapping and associated equipment.



USS GERRARD STEEL STRAPPING

Round and Flat

UNITED STATES STEEL

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Gerrard Steel Strapping Division
United States Steel Corporation
2937 West 47th Street, Chicago 32, Ill.

Please send me, free of charge, the new 36-page GERRARD Blue Book of Packaging.

Name ..... Title.....

Company .....

Address .....

City ..... State.....

☐ Have Salesman Call
☐ Literature only

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SHEAR PAD

Continued

be suitably combined with boundary plates in a way that permits them to act as shear pads when loaded parallel to the load faces while they still maintain their appreciable values as compression cushioning materials under loads applied perpendicular to the load faces.

If mounts were disposed at opposite ends of the tubes, they could act as shear pads under transverse shocks (which are most likely to be damaging to tubes) and as compression cushioning under axial transients (in which direction the tubes are considerably stronger). Furthermore, while one mount acts in compression, the opposite assists in tension. It was found that in packages using this type of cushioning system, overall cubage could be considerably reduced.

Load-deflection characteristics of several types of cushioning materials were studied and those chosen were selected because they had reliable energy-absorbing characteristics and adequate strength properties in compression, tension and shear. The required stiffness of the material used was determined on the basis of the weight of the tube to be protected and the allowable shock the tube would withstand. Dimensions of the pads were computed to provide the proper cross-sectional area for shear and proper thickness for tension and compression.

Preliminary tests were performed on dummy tubes, which were electronically inoperable, to which accelerometers were attached in two perpendicular planes —axial and transverse.

Tubes were held in place by a metal frame or by cane fiber discs or die-cut pads within an interior container. The interior package was shock mounted from the exterior container at top and bottom by rubber mounts fastened to both the interior package and the exterior container.

Although the Bureau of Ships contract specified a drop test from

Circle No. 84 on Reader Service Card for more information

a height of 48 inches on diagonally opposite corners computations were based on a 48-inch flat drop on the container sides because it resulted in a greater shock in a direction transverse to the axis of the tube.

Final tests were conducted with the containers loaded with tubes which had been checked and found to be in good operating condition. After performance of all required tests, the acceptance criterion used was continued satisfactory tube performance.

Tare weight, cube and material costs of containers using the shear pad system of cushioning were considerably lower than in the previous methods of packaging. Following is a tube-by-tube rundown of weight, cube and costs of the proposed method expressed as percentages of the old designs:

Tube Type	Percentage of old design		
	Tare weight	Cube	Cost
4J51	19.2	15.0	30.6
891R	82.5	57.0	47.4
846	29.6	45.1	12.0
5667	74.4	41.3	41.7
*857B	265.	100.4	41.6
*207	315.	87.8	42.8

**Comparisons on these two tubes are not completely significant because the containers furnished to Container Laboratories for testing did not conform to MIL-P-75A and afforded inadequate protection to the tube.*

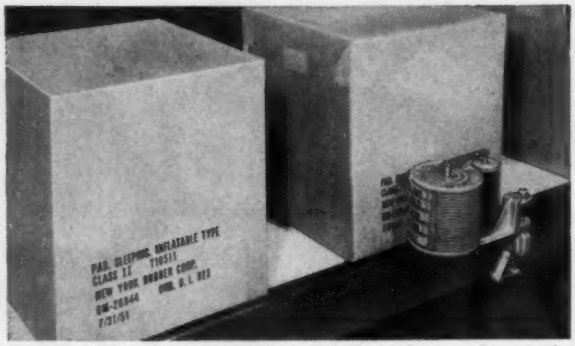
As a result of the extensive design and test program, a number of interesting conclusions were drawn. Because those conclusions are applicable to the packaging of all electron tubes and many other fragile items, they should be of significance to all packaging engineers. They are:

1. All package designs for electron tubes, whether they are included in the specification as a standard design or whether they are permitted as an alternate design, should be based on four basic factors: weight, cubage, cost and fragility of the tube.

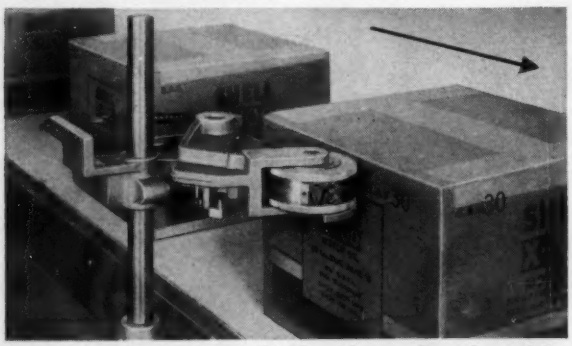
(Continued on page 139)

Low-cost marking attachments save thousands of $ every year

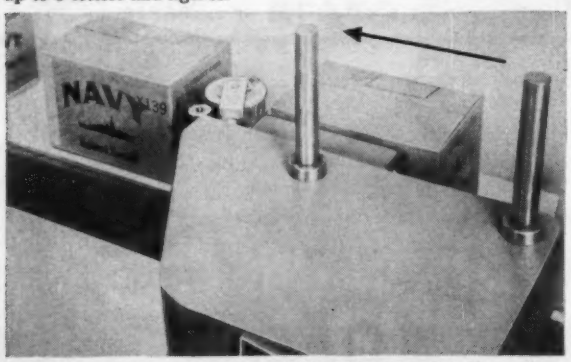
Compact ROLACODER machines mark 1, 2 or 4 sides of cartons, cases, drums, bags, etc. automatically



Friction-operated ROLACODER "100" machine makes single, accurate "spot" imprint of brand names, varieties, code-dates, lot numbers on one side of containers as they travel on conveyors or through case-sealer. Prints from 1 to 5 lines of copy up to 12" long from easily interchangeable rubber type.



Twin-action ROLACODER "500" marker marks codes and lot numbers on *front* and *one side panel* of cases simultaneously . . . in a single pass. Friction-operated . . . imprints legends containing up to 8 letters and figures.



Solenoid-activated twin-action ROLACODER "200" machine imprints codes and lot numbers on *rear* and one side panel (or rear only). When mounted in tandem with ROLACODER "500" machine, cases can be marked on all 4 sides simultaneously without requiring that they be turned. Write for new Bulletin "ROL-2"

See them in action . . . Booth 1138, National Packaging Exposition . . . Chicago, April 8-11

Gottscho

ADOLPH GOTTSCHO, INC.

Dept. D, Hillside 5, N. J.

Automatic CODING, MARKING, IMPRINTING MACHINES

In Canada: **RICHARDSON AGENCIES, LTD., Toronto & Montreal**

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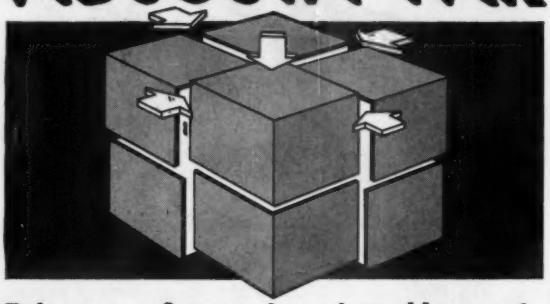
ADJUSTA-PAK



Telescopes 3 ways to cut packing costs

For combining packages of various sizes into one secure unit, there's nothing like Signode's Adjusta-Pak (patented).

How it works: eight scored and slotted sheets of corrugated are quickly folded into Adjusta-Pak sections that telescope in three dimensions. Packed container is secured with Signode steel strapping.

What it does: ends the search for a right-size container and the waste of cutting containers to size. Cuts dunnage, saves cubage and weight, prevents pilferage. Ideal for over-packing domestic containers for export.

Adjusta-Pak comes in three standard sizes. Free descriptive folder shows details, includes size chart. Write for your copy.

SIGNODE STEEL STRAPPING CO.

Dept. SP, 2618 N. Western Avenue, Chicago 47, Illinois
Offices coast to coast.
Foreign Subsidiaries and Distributors World-Wide
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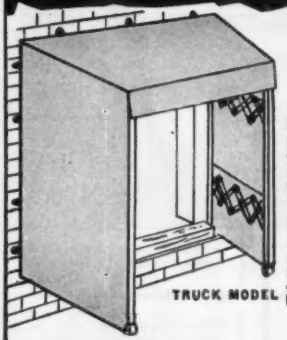
Tunnels for Safety



DAZZO DOCKDOOR SHELTERS

Provides a retractable tunnelled passageway between building door and truck or freight car door.

Reduces loss of heat or cold in your plant, while dock doors are open for loading or unloading, also providing better protection from rain, wind, dust, sleet or snow, and slippery docks. Further effecting a saving by improving labor efficiency, preventing merchandise spoilage, and will quickly more than pay for themselves.

TRUCK MODEL

DAZZO PORTABLE FREIGHT CAR DOOR RAIN GUTTERS

Prevents rain or melting snow from sliding off car roof onto door opening . . . thereby avoiding wet and slippery dock boards.

Models for all types of cars

Write for literature... specify your requirements to Dept. F

*Pat. Pend.

DAZZO PRODUCTS CO.
152 Bleecker Street • New York 12, N. Y.

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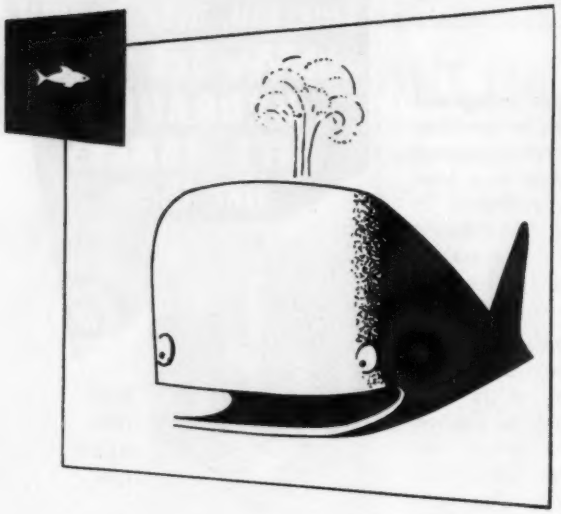
SHEAR PAD

Continued

2. To insure weight, cubage and cost, the inclusion in the specification of standard well-engineered package designs might be a feasible approach. As evidenced in this study, however, the standard specification designs were not entirely satisfactory and did not always protect tubes in transit.

3. The most important factor in the design of electron tube packages is the fragility of the tube itself. It is impossible to proceed with an accurate engineering design of the protective system without valid engineering data concerning how much protection is needed. (It is considered significant that valid numerical fragility data were available to cover only one of the tubes studied.) Tube manufacturers must accept the responsibility for determining and making available the G-factors of each tube type so that interior cushioning and packing may be properly designed.



***Quicker tack* for small packages...**

***Longer tack* for big ones...**

GREEN CORE®

superstandard gummed sealing tape

It's the gumming that makes Green Core so much better than other sealing tapes. Green Core's special "tack-timed" balanced adhesion formula reaches full tack quicker and stays tacky longer.

On big packages, Green Core tape strips don't dry out before application. That extra long tack saves lots of time and tape. For *all* uses, Green Core sticks instantly and permanently, with minimum rubbing.

Green Core saves time in another way, too, There are no pigtail curls to fight. Right down to the core, it comes out of the moistener straight and easy working.

You can't buy a better sealing tape than Green Core because there isn't any. Write for a free sample roll and see for yourself.

MID-STATES Gummed Paper Company

Dept. 318, 6850 S. HARLEM, BEDFORD PARK, ILL., ARGO P. O.

New York Syracuse Philadelphia Boston Atlanta
Cleveland Detroit St. Louis Los Angeles

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Circle 164 on Reader Service Card for more information

Strapper®

Five times faster than hand-strapping . . . completely automatic . . . handling mixed sizes in any order . . . the new AUTO-BAND Strapper marks the greatest advance to date in tensional steel strapping. If hand-strapping is beginning to "get in the way" of shipping schedules, the AUTO-BAND Strapper is for you. Call or write today.

- **AGRIPTA** . . . the lightweight "self-sealing" hand strapping tool provides the fast...dependable...simple operation you seek for maximum production efficiency at truly low cost. Get the details today!

GENERAL STRAPPING CORPORATION

100 PARK AVENUE, NEW YORK 17, N. Y.

You can speed up your shipments with fewer people and eliminate costly errors

HOW? By improving your method of addressing labels, tags and cartons. Old-fashioned stenciling and labeling methods can seriously delay shipments as well as waste precious time and labor.

FIRST STEP—Send today for your free copy of this new comprehensive booklet that describes the latest systems for addressing labels, tags and cartons.

Your free copy is waiting
Send for it today!

NEW BOOKLET TELLS:

- How to evaluate efficiency of shipment addressing operation
- Modern systems for addressing labels and tags
- The latest direct-to-carton stenciling systems
- Integrated shipment addressing, the newest trend in order-processing

Weber

WEBER MARKING SYSTEMS
Div. of Weber Addressing Machine Co., Inc.
Dept. 1-C
Mount Prospect, Illinois

SALES AND SERVICE IN ALL PRINCIPAL CITIES

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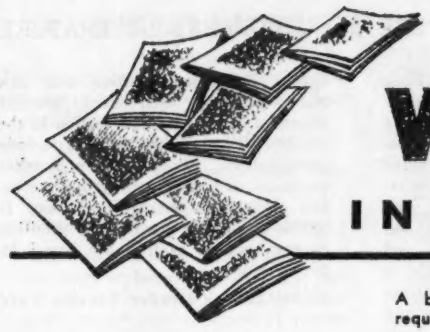


WHAT'S NEW
IN USEFUL LITERATURE

A bibliography of New and Current Manufacturers' Publications available upon request. Indicate choice (s) on self-mailing Reader Service Card on pages 59 and 60.

Complete Catalog on Overhead Conveyors:

Just off the press and ready for distribution is a new complete and easy-to-use catalog published by Mechanical Handling Systems Inc., describing the company's overhead conveyor, the Monoveyor. Consisting of over 100 pages, the catalog contains 13 sections. There is a separate section for each basic component of the system, including chains, tracks, rollers, turns, drive wheels, etc. Each section is packed with photographs, dimensional drawings, specifications and complete descriptions. This catalog is designed as a working tool for material handling and production engineers. An introductory section on application and design adds further to its usefulness.

Circle 190 on Reader Service Card

Standards Bulletins Available:

The Caster and Floor Truck Manufacturer's Association has recently published a series of standards bulletins which are available to industry. These bulletins cover industrial trailers, molded-on wheels, plastic wheels, metal wheels, and dead skid platforms. They provide such information as definition of terms, descriptions and classifications of product types, capacities, sizes and other data pertaining to the specific subject of each bulletin. Each is 8½ x 11 inches, and 3-hole punched for standard 3-ring binders. Copies may be obtained by writing directly to the Caster and Floor Truck Manufacturers' Association, 27 East Monroe Street, Chicago 3, Illinois.

Overhead Conveyors are Completely Enclosed:

Chainveyor overhead conveyors are thoroughly described in a 16-page bulletin available from Chainveyor Corporation. These completely enclosed units are engineered for loads up to 60 pounds per foot. They can run straight up or down, or upside down when needed. Standard curves have a 16-inch radius to the centerline. The literature provides details on such components as chains, power drives, tracks, hangers, etc. It also includes performance data and description of actual installations.

Circle 192 on Reader Service Card

Scrapers Shown in Action:

The four pull-type scrapers in the Allis-Chalmers Construction Machinery line are featured in bulletin MS-1149 recently issued by Allis-Chalmers Manufacturing Company. Each scraper model is shown in action. Several of the design features are illustrated and explained in detail.

Circle 193 on Reader Service Card

Lifter Is Easily Portable:

The Colson Corporation's "Half-Tonner", a portable lift truck with a 1000 pound capacity, is described in a new bulletin available from the company. The truck is equipped with 8-inch swivel casters and 5-inch wheels for easy maneuverability, and is available with either battery or electric hydraulic power units. It is suited for operations involving piling, lifting, elevating, racking and feeding.

Circle 194 on Reader Service Card

The Development of an Idea:

The Exide Industrial Division of The Electric Storage Battery Company has just published a 32-page brochure, designed to acquaint industry with Exide's facilities for research and development in the battery field. The brochure explains how engineering ideas are transformed into realities through careful control in research, production and testing. A separate section describes the Exide-Ironclad Battery, and the advantages of the Silvium grid.

Circle 195 on Reader Service Card

Lightweight Pallet Dollies:

A new Pallet Dolly circular recently published by the Samuel Olson Mfg. Co., Inc. illustrates and describes a complete line of pallet dollies, roller conveyor ramps and special assembly dollies produced by the firm. According to the manufacturer, Olson dollies are designed with minimum weight for practical carrying capacity. The new 700B catalog details design and construction features of each particular type. Roller and wheel types are included in the company's line.

Circle 196 on Reader Service Card

TV System Features Remote Control:

A new 8-page descriptive brochure has just been issued by Philco Corporation, covering its newly designed line of industrial television equipment. Included in the new line are cameras with full remote control for adjustment of focus and iris apertures, and for both high and low speed tilt and pan. The booklet contains illustrations of the latest developments in cameras, monitors, controls, lenses and accessories. Also listed are several waterproof and explosion resistant housings.

Circle 197 on Reader Service Card

CEMA Guide Becomes ASA Dictionary:

"Conveyor Terms and Definitions", the industry dictionary published by the Conveyor Equipment Manufacturers Association, has been approved by the American Standards Association as its guide to standards for conveyors. The 64-page booklet defines nearly 1500 terms applied to conveyors and conveyor equipment. It contains nearly 100 drawings. Copies are available at $1.00 each from CEMA, One Thomas Circle, Washington 5, D.C.

Portable Unit Closes Bags of All Types:

The Fischbein Portable Bag Closer is described in a 4-page bulletin available from Dave Fischbein Company. Weighing only 10½ pounds, the unit plugs into any electrical outlet, and requires no installation or supports. It will handle any type of textile or paper bag, including asphalt treated or specially processed bags. The average 100-pound bag can be closed in less than six seconds, according to the manufacturer.

Circle 199 on Reader Service Card

Methods of Handling Expendable Pallets:

An illustrated chart, which describes the most efficient methods of handling expendable pallets of wood or non-wood construction, is offered by Signode Steel Strapping Company. Designed for use by shipping room and

loading dock personnel, it includes instructions for loading boxes on pallets, handling pallets by fork trucks and hand pallet trucks, and both truck and carloading methods.

Circle 200 on Reader Service Card

Corrosion Resistant Re-Rated Motors:

A bulletin featuring the new series 254-U All-Weather re-rated motors developed by Robbins & Myers, Inc., is available from the company's motor division. The 8-page literature describes the new motor's features, highlighted by a specially-treated corrosion resistant housing, which affords protection against all adverse weather conditions. Internal metal and cast iron parts are also given the anti-corrosion treatment. External design is such as to protect internal parts against entry of debris and other foreign objects.

(Also reviewed in January)

Circle 201 on Reader Service Card

Air-Controlled Power Shovel:

A new catalog describing the fully air-controlled, crawler mounted Lorain "50" is now available from the Thew Shovel Company, manufacturers of the Lorain line of power shovels and cranes. The literature describes and illustrates the many new features incorporated in the "50", a popular model in the 1-yard class, and which have been designed to lessen operator fatigue, give fast working cycles and provide trouble-free operation.

(Also reviewed in January)

Circle 202 on Reader Service Card

Solves Special Door Problems:

Overhead doors of the Barcol Overdoors line, for residential, commercial and industrial applications, are presented in a new 16-page catalog by Barber-Colman Company. The book gives full information on new Weather-King flush sections, which combine high insulation-value sandwich construction with guaranteed weatherproof facing. Weather-King doors, electric operators, radio controls, special controls, and Wardrobe doors are described and illustrated. Specifications and instructions for preparing building openings and for installing various models are given, with detail drawings. Solutions to special installation problems are also included.

Circle 203 on Reader Service Card

LP-Gas in Truck Fleets:

A new 8-page brochure entitled "How Truckers Save on Fuel, Lubrication and Maintenance" has just been released by Century Gas Equipment Company. The bulletin explains the five advantages of LP-Gas in truck fleet operations and points out the savings many operators realize through use of butane-propane as motor fuel. Well illustrated, it shows various types of carburetors, and compares Century's progressive jet carburetor with its metering valve to the conventional type venturi carburetor. Installation and schematic drawings are also included.

(Also reviewed in January)

Circle 204 on Reader Service Card

Solves Drum Handling Problems:

A new bulletin on conveyors for drum and barrel handling is now available from Conveyor Systems, Inc. The literature contains several illustrated case histories showing typical drum and barrel handling equipment now available from the firm.

Circle 205 on Reader Service Card

Ratchet Hoist for Multiple Uses:

The Yale & Towne Manufacturing Company has published a new catalog covering its lines of Pul-Lift ratchet hoists. These lightweight, versatile tools are available in roller chain and link chain models, and are produced in capacities from ¾ ton to 15 tons. Complete specifications for the various models are included in the literature.

Circle 206 on Reader Service Card

All-Product Catalog:

The Colson Corporation has recently published a comprehensive catalog listing the company's entire line of material handling equipment. These products include casters, wheels, conveyors, lifting equipment, lift jacks and skids, pallet and skid trucks, racking and shelving, terminal and warehouse trucks, maintenance lifters and fork truck greasing lifts. Each product classification has its own section in the catalog. These product sections include specifications, illustrations, and other pertinent user data such as how to select proper equipment. The catalog is plastic-bound, to permit the addition of new sections as they are issued by the company.

Circle 207 on Reader Service Card

Portable Lift Case Histories:

The Oster Manufacturing Company has made available a series of case histories describing actual uses of its portable lift. These application stories include examples in the plastics, aviation, motors and tubular products industries. They show the portable lift in action for warehousing, machine set-up, work in process, and intra-departmental handling applications.

Circle 208 on Reader Service Card

All About Conveyors:

Bulletin No. 64, newly published by Standard Conveyor Company, covers up-to-date information on 12 standardized Conveyor Units. This 32-page booklet contains photographs of typical installations of various types of conveyors, including straight and curved sections in aluminum or steel, portable and stationary belt conveyors, and special units of many kinds. Specifications and installation drawings are also included.

(Also reviewed in February)

Circle 209 on Reader Service Card

Dock Ramps for Air or Electric Operation:

Globe Hoist Company's new line of Trans-O-Matic Ramps is described in a 6-page illustrated bulletin just published. These power-operated, automatic leveling dock ramps are manufactured for either airoil (air compressor) or electric operation. Hinged to the dock plate, they provide a "gangplank" between the dock and the bed of a truck or trailer. Globe Trans-O-Matic Ramps have a capacity rating of 20,000 pounds, both for "roll over" and "cross over" loads.

Circle 210 on Reader Service Card

Wall Chart Gives Chain Data:

The S. G. Taylor Chain Company, Inc. has just published a wall chart to be used as a guide in the proper use of alloy chains and alloy slings. The 22 x 28 inch chart features a table giving the working load of single, double, triple and quad branch slings—sizes from ¼ inch to 2 inches—when used at 90°, 60°, 45°, 30° and 10° angles with the load. It also provides definitions, in-

structions, cautions and inspection procedures for the use of chain under heat conditions.

(Also reviewed in February)

Circle 211 on Reader Service Card

More Work from Tractors:

An 8-page catalog offered by Hyster Company explains how the right job attachment increases production and profit on virtually all types of tractor operations. Shown are the complete line of tractor-mounted accessories for Caterpillar-built tractors, including heavy-duty towing winches, worm drive winches, Hyspeed winches, oil well servicing winches, Hyster Donkey hoists and Hyster Yarders. Also described is the company's exclusive tractor-mounted Hystaway excavator-crane which can be equipped as a dragline, clamshell, crane, pile driver, shovel or backhoe.

Circle 212 on Reader Service Card

Eases Bar Stock Handling:

The new Bar-Lugger allows one operator alone to handle up to six inch bars with ease, according to a bulletin available from Industrial East Company. The clamp-like device connects easily, uses no fittings, and requires no drilling. Used with overhead conveyors, it facilitates bin storage and withdrawal, in either pigeon hole or open type storage racks. Capacity of the Bar-Lugger is 2000 pounds.

Circle 213 on Reader Service Card

Career Opportunities:

A new brochure that describes the career opportunities available in the material handling field, and tells how to get them, is now available from The Material Handling Institute, Inc. The four-page publication tells those who are interested in a material handling career what steps to take if they are now in college, high school or employed in industry.

(Also reviewed in February)

Circle 214 on Reader Service Card

Loads, Unloads Pallets Automatically:

A new 8-page bulletin published by Food Machinery and Chemical Corporation describes the action of the company's automatic Pallet Loader-Unloader combinations. These units are now available for stacking or unloading cartons, bottles and barrels. The FMC Pallet Loader-Unloader, designated as model 408000, consists essentially of a case unstacker and a case stacker, which have been integrated with the proper control mechanisms into a completely automatic unit. It can handle wood cases, barrels, returnable containers, etc. at rates up to 20 per minute.

Circle 215 on Reader Service Card

Build-Your-Own Truck Kit:

A bulletin issued by Milwaukee Truck Company describes the firm's new platform truck kit. The kit comes complete with everything needed to assemble a sturdy platform truck, except the platform itself. In that way, each user can construct a truck of the exact size and shape to suit his own needs. It includes two 4-inch swivel casters and two 4-inch rigid casters, two steel handle brackets, a tubular steel handle, and sufficient nuts and bolts for assembling.

Circle 216 on Reader Service Card

Sprockets Available from Stock:

Link-Belt sprockets, with shear pin protection, are now available from stock in a new "off-the-shelf" roller chain shear pin sprocket. This program meets the need for quick delivery under emergency conditions, and facilitates normal order handling. Folder 2749, just published by Link-Belt Company, gives detailed information and tables listing stock sizes, torque ratings, hub dimensions and keyseats.

(Also reviewed in February)

Circle 217 on Reader Service Card

Ball Transfer Unit Will Not Clog:

A new non-clogging "Nylo" Ball-Transfer Unit for ball-top stands is the subject of an illustrated booklet just released by Metzgar Conveyor Company. The bulletin describes the unit as a cup retainer acting as a race for the customary 1-inch steel ball. Open at the bottom, it permits dirt, grit and foreign matter to drop out. It is said to be impervious to food acids, steam cleaning, weather, salt brine, alkalis, detergents, mild acids and oils. It is accepted under all food sanitation laws, as the ball can easily be removed from the cup, without tools, for total cleaning.

Circle 218 on Reader Service Card

New Uses For Industrial TV:

Closed circuit television is the subject of literature released by Dage Television Division, Thompson Products, Inc. The literature explains how industrial TV is profitably used in rail yards, colleges and schools, and various other industrial installations.

(Also reviewed in February)

Circle 219 on Reader Service Card

Pocket-Size Rapid Computer:

A pocket-size computer, along with a booklet called "Fascination in Numbers", is offered by Graham Transmissions, Inc. This new type of computer may be applied not only for ordinary slide-rule computations, but for the rapid solution of any formula special to a business, involving two variables raised to any power or root, and a constant. For example, for a formula for the capacity of a tank in gallons, in terms of tank diameter and length, the special vertical scale for diameter would have markings on each side, and would include the diameter square and the constant. The standard horizontal scale would set up the length—the capacity being read on the diagonal.

Circle 220 on Reader Service Card

Manufactured in Steel or Aluminum:

Gravity wheel conveyors in steel or aluminum are fully described in an 8-page booklet offered by Sage Equipment Company, Inc. Straight sections of these conveyors are available in 5 foot and 10 foot lengths, and curved sections may be had for both 45° and 90° curves. A variety of widths and wheel arrangements will meet almost any requirement. In addition to the standard sections, the literature also describes such accessories as tripod stands, adjustable legs, portable stands, etc.

Circle 221 on Reader Service Card

Truck Couplers:

A new Truck Engineering Bulletin illustrating and describing various types of couplings available from and used on its line of power industrial trucks has been released by The Elwell-Parker Electric Company. The literature covers pin type, double height pin type, automatic couplers, remote control, and U-bolt type couplers.

(Also reviewed in February)

Circle 222 on Reader Service Card

Polices Wayward Belts:

Wayward belt troubles are said to be eliminated by the Greer Belt Guider, described in a folder from the manufacturer, J. W. Greer Company. The device operates by means of a sensing unit at the side of the belt. It is so arranged that it goes to work whenever the belt goes the least bit wayward, causing two electric motor-operated guide rollers to automatically shift position, guiding the belt back to its proper position. Guiders are made in sizes for 16, 24, 32 and 40 inch belts, and are available in special sizes when required.

Circle 223 on Reader Service Card

Impact of the New Highway Act:

A recent issue of Transmission Topics magazine, published by the Fuller Manufacturing Company, Transmission Division, discusses editorially the new era created by the $33 billion National

Highway Act of 1956. It deals with the impact the huge program will have on producers of road machinery, as well as on labor forces, and on business of all kinds.

Circle 224 on Reader Service Card

Emphasizes Operator's Skill:

"No matter how good a machine may be mechanically, it is no better than the operator's ability to handle it." This reasoning is taken from the new Operator's Guide just released by Caterpillar Tractor Company. The illustrated, 4-color booklet describes in simple terms the way to get the most work out of a Traxcavator with the least amount of effort. The guide also illustrates the attachments which increase the Travcavator's versatility. Included are instructions for towing scrapers, ripping, and for using straight and angling bulldozers, log and lumber forks, quarry buckets, skeleton rock buckets, light material buckets and root and rock rakes.

Circle 225 on Reader Service Card

Provides Power for Snow Blower:

Powerful snow blowers for use in Canada are driven by engines manufactured by Wisconsin Motor Company. A recent issue of "Enginews", published by the firm, presents a complete story on this use of Wisconsin power units.

(Also reviewed in February)

Circle 226 on Reader Service Card

Tape Dispenser is Air-Operated:

Four new models of fully automatic air-operated tape dispensers are described in a bulletin offered by Air Fixtures Inc. The machines are said to eliminate all push buttons, levers and foot pedals. When the operator removes a length of tape, a micro switch automatically sets in motion the next delivery cycle. The unit is available for all types of pressure sensitive tapes in widths up to 4 inches, for lengths up to 21 inches.

Circle 227 on Reader Service Card

Price List for SR-4 Strain Gages:

A new price list on SR-4 strain gages, instruments and accessories has just been offered by the Electronics and Instrumentation Division of Baldwin-Lima-Hamilton Corporation. In addition to offering the new flat grid gages and other new products, the price list contains a thorough discussion of gages and methods of using them, and constitutes a complete guide to the proper selection of gages. Other products in the new price list include several new, self-compensated gages, a complete high temperature and room temperature foil gage line, and an assortment of special cement kits.

Circle 228 on Reader Service Card

Illustrated Food Service Equipment:

Crescent Metal Products, Inc. has just published a new four-page Composite Catalog No. 203A, which shows typical units of the complete Cres-Cor line of aluminum food service equipment. The literature states that Cres-Cor units are designed for maximum transportability with a maximum carrying capacity.

(Also reviewed in February)

Circle 229 on Reader Service Card

When Conveyors?

A pamphlet available from Jervis B. Webb Company illustrated and explains several of the various types of conveyors and conveyor systems, manufactured by the firm. It also discusses the conditions under which operations of various kinds should be conveyorized.

Circle 230 on Reader Service Card

Compact Trolley Bracket:

Literature available from Dearborn Engineering and Fabricating Company describes a new, simple and compact three-piece Overhead Cable Conveyor Trolley Bracket. When assembled, the two upper side arms fit over swaged cable buttons nested within a recess in the female lower unit. The complete assembly is securely held by two tapered hardened bolts. Cable Links are manufactured in multiples of 8, 16 and 24 inches. Elimination of wearing parts below the rail assures long, smooth, uninterupted service.

(Also reviewed in February)

Circle 231 on Reader Service Card

Vacuum Fittings and Tubes:

Steel tubing and fittings for vacuum systems and conveyor lines are the subject of a 4-page booklet just published by H-P Products, Inc. Vacu-Flo tubing and fittings employ slip-fit design to eliminate "dead-head" pockets. They have smooth walls without obstructions, and their free flowing directional design provides maximum load capacity with minimum weight and simple installation. Complete specifications are provided in the literature for tubes and fittings of various sizes and angles.

Circle 232 on Reader Service Card

Samples Enclosed:

Samples of fiberglas reinforced tapes and papers are included in a new brochure available from Owens-Corning Fiberglas. The literature illustrates and describes applications of these tapes for wrapping, covering, shrouding, case lining, shipping, bundling, palletizing and unitizing. In addition, a list of manufacturers is provided for Fiberglas reinforced pressure sensitive tapes, box tapes and weatherproof papers.

Circle 233 on Reader Service Card

Heat Sealers for Every Need:

Literature from Doughboy Industries, Inc. describes the firm's complete line of continuous heat sealers and belt conveyors. Rotary sealers are produced for cellophane, glassine and wax bags, foils, laminates and coated papers. Continuous band sealers are offered for plastic films such as polyethylene, vinyls and pliofilm.

Circle 234 on Reader Service Card

Gives Accurate Humidity Check:

Accurate electrical checks on humidity are possible through the use of the El-Tronics Electrical Humidity Detecting System, described in literature from El-Tronics, Inc. The system employs an electrical resistance grid, placed on the inside of a package and connected to a small receptacle on the outside. A special indicator shows the exact humidity inside the package by measuring the electrical resistance and converting it to relative humidity. The system complies with military specifications.

Circle 235 on Reader Service Card

Cushioning Specifications:

RubbAir padding-barrier material, a combination of curled horse and hog hair permanently bonded with natural latex by vulcanizing, is the topic covered in a four-page folder available from American Latex Fibre Corporation. The material is said to be shock resistant, moisture resistant and dust-free. It may be purchased in a variety of densities and thicknesses, in sheets of any size, or die-cut to suit any particular needs. It meets all military specifications for barrier materials of rubberized curled hair.

(Also reviewed in February)

Circle 236 on Reader Service Card

Television for Industry:

The new Observer TV camera for industrial applications is described in a 4-page booklet from Blonder-Tongue Laboratories, Inc. The literature describes typical installations of closed-circuit television to which the Observer can be adapted. The camera can be used up to 3000 feet from the receiver before amplification becomes necessary. No special illumination is required; ordinary room light is sufficient.

Circle 237 on Reader Service Card

Complete Manual on Casters:

Darnell Corporation offers a complete pocket-size caster and wheel manual describing its casters for various uses. The 191-page Manual No. 60 provides photographs, dimension drawings, specifications and descriptions of the firm's casters. These include casters for light, medium and heavy industrial applications, furniture, offices and institutional equipment. A complete section of the book is devoted to Darnell E-Z Roll wheels.

Circle 238 on Reader Service Card

Electric Hoist Minimizes Maintenance:

Wright Speedway Frame 1 and 1½ Electric Hoists are the subject of Bulletin DH 133B available from the Wright Hoist Division of American Chain & Cable Company, Inc. Speedway Frame 1 and 1½ hoists have capacities from 500 pounds to 4000 pounds. The manufacturer stresses that redesigning has resulted in increased life and a reduction of maintenance. Included in the catalog are cutaway drawings, specifications, etc. Various types of mounting and suspension are also discussed.

Circle 239 on Reader Service Card

Provides Battery Specifications:

Slyver-Clad batteries for use with rider-type electric industrial trucks are the subject of a new bulletin just published by C & D Batteries, Inc. Bulletin IT-524/56 provides specifications and data on battery ratings and capacities, details of design and construction, dimensions and weights.

(Also reviewed in February)

Circle 240 on Reader Service Card

Provides Compact Storage:

Catalog 504 available from Stackbin Corporation describes the company's line of multi-purpose steel racks and containers for processing, assembly and storage. Stackbins and Stackracks are said to save space and speed inventory counts. Stackbins are produced in various sizes, shapes and capacities, and can be used for production lines, stockrooms and interplant transportation. Together with the racks, which are also produced to a variety of specifications, they provide a versatile system of stacking containers that can be set up or rearranged without tools or power equipment of any kind.

Circle 241 on Reader Service Card

Wire Baskets Fit All Needs:

Specialized wire containers for processing operations such as plating, heat treating, degreasing, etc. are described in a new 12-page booklet published by Wiretex Manufacturing Co., Inc. These containers are available in metals and alloys for your every need, as determined by the processing cycle. There are no limits in form, size, strength or weight. Each product is custom built. Fine or course mesh, perforated or expanded metals are available.

Circle 242 on Reader Service Card

Aid to Storage Planning:

How to plan storage areas efficiently by using Republic Steel Corporation's "Storage Engineering" service, is featured in a new 36-page catalog of steel shelving issued by the Berger Division. Catalog No. ES-1087 describes the company's full line of convertible steel shelving with several new construction features. A special section offers the assistance of Republic's trained staff of "storage engineers" to firms with storage problems.

(Also reviewed in February)

Circle 243 on Reader Service Card

Redesigned Portable Elevator:

Completely redesigned American Safeway Portable Elevating Trucks are described in Catalog HE-56 available from The American Pulley Company. The trucks are new from the floor up, and, according to the manufacturer, were redesigned as a result of a survey among users and distributors of material handling equipment. Maximum loads range from 1000 pounds for pedal-operated models to 1500 pounds for the battery-powered type. Standard models lift as high as 96 inches. In addition to the fork and platform elevating models, the line includes drum stackers and straddle models.

Circle 244 on Reader Service Card

Staples Anything from Tags to Boxcars:

Duo-Fast tackers and staplers for shipping and packaging operations are described in an illustrated folder available from the Fastener Corporation. A staple gun, tack hammer, outward clinch stapler, air pliers and portable footpower stapler are described and shown in actual use in the 6-page piece. The equipment is designed to staple anything from shipping tags and corrugated cartons, to the linings in boxcars, according to the folder.

Circle 245 on Reader Service Card

Lists LP-Gas Advantages:

Advantages of LP-Gas as a motor fuel are discussed in a new 8-page brochure issued by Century Gas Equipment Company. In addition to outlining user benefits, the folder compares LP-Gas cost factors with gasoline and diesel fuel. Entitled "How To Get More Farm Horsepower at Less Cost," it also describes and illustrates models of Century carburetors for all major tractor makes.

Circle 246 on Reader Service Card

Tips on Parcel Post:

"How to Get the Most out of Parcel Post" is the title of a pamphlet offered by Pitney-Bowes, Inc. This 8-page booklet presents helpful hints on the proper methods to employ in order to expedite your package mailings. It covers such topics as postal sizes, proper methods of addressing, how packages should be wrapped, and sealing techniques. Explanations are given for Special Handling, Special Delivery, Air Parcel Post and combining letters with 4th class mail. A special section is devoted to the advantages gained through metered mail.

Circle 247 on Reader Service Card

New Container Material:

A 4-page folder illustrating seven basic types of Tri-Wall Bulk Packs for lightweight but heavy-duty packaging is being offered by Tri-Wall Containers, Inc. Tri-Wall Bulk Packs are made of Tri-Wall Pak, a new patented development in packaging which is said by the manufacturer to combine economy, strength and light weight. It is made of triple rows of fluting, similar to corrugated, and is said to be so sturdy that it can replace lumber, plywood

and cleated fibreboard in the construction of many types of containers. Tri-Wall Bulk Packs can be made large enough to accommodate truck cabs, and in strengths great enough to carry extremely heavy loads.

(Also reviewed in January)

Circle 248 on Reader Service Card

Continuous Flow with Woven Belts:

The Cambridge Wire Cloth Company describes an operation using moving belts for continuous nitriding, normalizing, cooling and waxing, in a recent issue of its house organ "The Cambridge Wire". A large spring manufacturer replaced box oven methods with woven wire belts, increasing production and reducing space requirements. Complete details are given in the literature.

Circle 249 on Reader Service Card

Picks Up Palletless Loads Unaided:

A Push-Pull Loader with Integral Side Shift, which is used for palletless handling, is the subject of a new bulletin published by The Yale & Towne Manufacturing Company. The attachment can be fitted to any Yale industrial lift truck, and deposits and picks up palletless loads without manual aid. It sideshifts the load for easier stacking. In addition to providing complete specifications on the attachment, the bulletin pictorially describes the proper procedure for handling without pallets.

Circle 250 on Reader Service Card

Ten New Bulletins Available:

Magline, Inc. now offers a series of ten new product bulletins covering its complete line of 4-wheel magnesium trucks. These bulletins present detailed descriptions and specifications on Magline platform trucks, trailer trucks, box trucks, tow-line trucks and other models in the line. Made of lightweight magnesium, the floor trucks combine durability and ease of operation for fast, efficient load handling.

Circle 251 on Reader Service Card

Drives 145 Nails Per Minute:

Long, sturdy nails made by the new Hercules-9 Auto-Nailer, can be driven accurately into wood, plastic or other materials at the rate of 145 nails per minute, or 8,700 per hour. A new 4-page bulletin from Auto-Nailer Company describes the machine in detail, and illustrates eight of the many different nailing applications for which it may be used. Wire of 13 or 15 gage may be used, in 60-pound coils. Maximum nail length is 2¾ inches, minimum ½ inch.

Circle 252 on Reader Service Card

Packs 510 Beers a Minute:

A brewery operation that takes only two elements to box more than 30,000 cans of beer per hour is described in a recent issue of Package Laboratory News, issued by Hinde & Dauch. The system employs close-tolerance corrugated boxes that permit automatic packaging machinery to operate at maximum speed. Photographs of the operation are included. In addition, the publication also shows specially designed corrugated containers for a variety of products from clock radios to cowboy boots.

Circle 253 on Reader Service Card

Mine Conveyor Data:

Three types of mine conveyors to serve every type of mine conveying need are thoroughly discussed in a new 16-page booklet recently offered by Hewitt Robins Inc. Separate models are available for uphill operation, uphill or downhill operation, and room entries and similar service. Complete drawings and specifications are included. In addition, takeups, pulleys, controls and drives are also described in the literature.

(Also reviewed in February)

Circle 254 on Reader Service Card

Pallet Boxes Are Re-Usable:

Wooden pallet boxes that are collapsible and re-usable are the subject of a 4-page folder available from Biglow-Garvey Lumber Company. These palletized containers are available in models for handling a variety of materials. They may be stacked three or four high, and can be supplied with drop-leaf doors or removable gates for easy access to contents. A number of palletized storage racks and expendable pallet boxes are also shown in the folder.

Circle 255 on Reader Service Card

Builds Useful Structures:

Precision-made, cold-rolled galvanized steel angle can be transformed by your own plant personnel into useful, economical structures anywhere in the plant, warehouse or office. Dexion Slotted Angle can be assembled with no more complicated tools than a wrench and the special Dexion cutter. The entire system is described, with several actual photographs, in literature available from the Acme Steel Company.

Circle 256 on Reader Service Card

Straddle Carrier Stars In Film:

A building supply dealer uses a Clark-Ross straddle carrier to deliver bricks directly to construction areas in a 12-minute, color, silent movie now available from Ross Carrier Division, Clark Equipment Company. The film illustrates how the straddle carrier loads and unloads itself in seconds, and shows how four-wheel drive enables it to drive through mud and sand to deposit its load wherever needed.

Circle 257 on Reader Service Card

Operates Doors Automatically:

Commercial, industrial, residential and special doors are operated electronically by Robot controls described in literature from Robot Appliances, Inc. A new Mat-Switch, sensitive to five pounds of pressure, is activated by a person stepping on it or a vehicle passing over it. This switch is covered in detail by the literature.

Circle 258 on Reader Service Card

Sling Catalog:

Catalog A-931, a newly published catalog by John A. Roebling's Sons Corporation, is designed for quick and accurate sling selection and ordering. Organized around a simple coding system, the literature includes information on all-purpose slings with tapered sleeve attachments, Roegal cable-laid slings, flatweave slings, railroad slings and assemblies, fittings and general data.

(Also reviewed in February)

Circle 259 on Reader Service Card

New Type Leakproof Steel Drum:

Literature available from Wraps, Inc. describes a new steel drum with a radical type of closure that is said to be completely leakproof. The drum has a screw-on type lid which, according to the manufacturer, can be applied in eight seconds. Called the Twist-Lock drum, it is available on immediate basis. It is said to conform with Air Force specifications for leakproof drums.

Circle 260 on Reader Service Card

Conveyor Belt Attachments:

Holz Rubber Company's line of Pivot-Flite conveyor belt attachments, pulley lagging, chute liners and special rubber products for industrial use are described in a new 4-page brochure recently published by the company. These conveyor belt attachments include various cleats and other specialized equipment. Also described are the company's facilities for the development, design and manufacture of special industrial rubber parts, and such services as tank lining, roll covering, custom molding and extruding.

Circle 315 on Reader Service Card

Tape for Electrical Uses:

Industrial tapes for electrical uses are described in a 4-page folder offered by F.O.S. Industrial Tape Division of The Seamless Rubber Company. The literature provides characteristics for eight different electrical tapes available from the firm. This technical data includes caliper, adhesion, tensile strength, tear resistance, elongation, dielectric strength, electrolytic corrosion factor and insulation resistance.

Circle 316 on Reader Service Card

Plywood Container is Collapsible:

Atlas Plywood Corporation's new Ply-Bound Crate is described in a new bulletin issued by the company. Ply-Bound is a maximum strength crate made of sturdy hardwood plywood. It consists of three pieces: base, top, and the tube which comprises the four sides. These sides are securely cleated at each end, and the cleats are held together at the seams by sturdy bands of wire, enabling the entire tube section to be shipped flat.

Circle 317 on Reader Service Card

Oscillating Conveyors Available from Stock:

Link-Belt Coilmount oscillating conveyors combine positive action and natural frequency principles. These medium-load conveyors are described in a new 8-page brochure No. 2644 offered by Link-Belt Company. They are available from stock, for quick delivery of pre-assembled sections. The literature shows various construction and performance features, lists specifications, and illustrates typical applications. It also presents a guide to the correct selection and application of stock size units. A capacity selection chart is included.

Circle 318 on Reader Service Card

Continuous Corrugated Aids Packaging:

National Container Corporation has published a 12-page gatefold type brochure, describing its recently introduced Fanfold corrugated pack. Fanfold consists of one continuous sheet of pre-scored corrugated board, conveniently shipped to you as a unitized bundle. Each unit can be designed to accommodate products of extreme length, or many similar items that vary in size and shape. Fanfold lends itself ideally to modern production line packing operations, according to the manufacturer. The longitudinal scores are custom designed to meet your individual packaging specifications.

Circle 319 on Reader Service Card

Feeds 200,000 Items Per Hour:

Feeding, counting and orienting up to 200,000 items per hour can be accomplished with the Feed-A-Matic parts feeder, described in a 4-page folder available from U. S. Engineering Company. The hopper, feed track and release are all engineered to operate with all types of products, regardless of size or shape. According to the manufacturer, it is possible to change over from one size item to another in 10 minutes, with only a few screw adjustments.

Circle 320 on Reader Service Card

Conveyors Increase Coal Output:

A push-button coal plant that produces 350 tons of coal per hour is described in a recent issue of Link-Belt News, published by Link-Belt Company. Conveyors and related equipment boosted the plant output by 25 percent. The entire operation is controlled by one man at a central control panel.

Circle 321 on Reader Service Card

Fabric Resists Damages:

Nyvel, a newly developed protective covering material, is described in a folder issued by its manufacturer, Velveray Corporation. The material is a fabric of woven nylon, inseparably laminated between two sheets of polyvinyl chloride. It is said to be water proof, tear and puncture resistant, and impervious to most greases, solvents and chemicals. Nyvel is available in fabrics of many textures and thicknesses. Since it is mildew-proof, it may be stored wet. It is available in any size, and can be fabricated by sewing with ordinary light machines, or by vinyl electronic heat sealing equipment. Included in the folder are several samples of the fabric.

Circle 322 on Reader Service Card

Visualization Made Easier:

Pre-printed symbols and shapes used in layout planning are illustrated and described in a 20-page folder recently published by Chart-Pak, Inc. These versatile materials make it possible for anyone to make professional graphs, organization and flow charts, or plant or office layouts. They consist of pressure sensitive tapes, templates and illustrated symbols, which are positioned on planning boards and sheets, to present an accurately scaled visual guide to planning.

Circle 323 on Reader Service Card

Elevates by Magnet:

Lightweight, versatile models of its Magna-Mover are described by Eriez Manufacturing Company in Bulletin B-87-1. These magnetic conveyors are available in two models—one for average and the other for heavier applications requiring conveying-elevating of small ferrous items. Angle incline is adjustable from 60° to 90°, and normal belt speed is 85 feet per minute. Standard models are available in 4-foot to 12-foot length, in 12-inch increments. Larger units can be built to special order.

Circle 324 on Reader Service Card

Improved Conveyor Lubricators:

Fundamental improvements in its new Automatic Conveyor Lubricators are described by J. N. Fauver Company, Inc. in an 8-page folder. The new 100 Series features a completely enclosed aluminum housing, improved filters and regulators, redesigned trip mechanism and provisions for easy "put-in" and "take-out" of service. The 700 Series features improved filters, regulators and air control panel. It has a universal pick-up, enabling it to handle equally well wheels of different manufacturers on the same conveyor. Drippage is eliminated by the use of a nozzle with automatic shut-off.

Circle 325 on Reader Service Card

Weighs Non-Dusty Materials:

Construction, operating rates, and economy features of a new multi-purpose open type bagging scale are described and illustrated in a 6-page bulletin No. 0256 offered by Richardson Scale Company. The literature discusses Richardson's FPA automatic bagging scale. This unit is designed to handle all types of non-dusty materials including grains, pellets, crumble, and range cubes to 2½ inches, in 25, 50 and 100 pound bags. A complete operating cycle is described, along with scale accuracy (to within 1 or 2 ounces) and bagging rates (12 to 15 bags per minute, depending on material).

Circle 326 on Reader Service Card

CONVEYING BY AIR . . .

(*Continued from page 78*)

Bulk unloading, with a closed-circuit system, at one or more points—with the product conveyed to a multiple number of storage bins—may be accomplished in the manner also shown. Through use of individual conveying lines the need for installing switch gates or other mechanical equipment above ground level is eliminated. Material is fed from the truck into the conveyor line through the inlet rotary air lock valve and directed, at a ground level switch gate, to any designated storage bin. The material entry point on bins is at a cyclonette located on top of each bin. A common return air line inter-connecting the cyclonettes may be used. If a common conveyor line is desired, either motorized or air operated diverter gates might be furnished, and these would be located above the bins.

This drawing also shows a multiple unloading arrangement from bins to processing area.

Flowing Hard and Soft Wood Chips

The Brown Co., in Berlin, N. H., recently installed a pneumatic system for conveying bulk quantities of wood chips.

Two types of chips are handled: Hard wood weighing 25 pounds per cubic foot; and soft wood weighing 17 pounds per cubic foot.

Chips arrive in railroad hopper cars and trailer trucks. Hopper car capacities are augmented by sides built-up three feet higher than normal—thus raising the load to 18.9 cords of chips. A car is spotted on a spur at the plant and unloaded mechanically to screening equipment.

Discharge from the screens is picked up by a positive air stream and conveyed to a single-stage cyclone receiver above the sulphite digester building. Chips are discharged onto an existing belt conveyor which moves the chips into a storage bin. The actual length of the conveying duct is 170 feet. Bins are filled at the rate of 30 cords per hour.

Since the new pneumatic conveying system is capable of being installed out of doors, in this case atop the already-built plant, valuable interior space has not been used.

Chips are reclaimed from bins by gravity and flow into the digester where they are made into pulp.

System Easily Expanded

How the flexibility of a pneumatic system has solved what could have been a tough handling problem is shown at Gouverneur Talc Co., of Belmat, N. Y. When the firm desired to increase its capacity by almost two times, handling requirements were met by easily made changes and additions to an existing pneumatic system.

Product talc from the grinding mills is pneumatically conveyed to storage where it is held until needed for shipment—at which time it is transported pneu-

matically to bagging or bulk loading. The original installation, now an integral part of the expanded system, included four 400-ton storage silos of concrete construction with conical bottoms and four pumps, three stationary and one portable.

One 5 inch stationary pump conveys talc from the pebble mill to storage, while an 8-inch stationary unit similarly transports the product of the fluid energy mills. A third stationary pump conveys talc recovered from a dust collector to product storage. An 8-inch portable pump, mounted on a track beneath the storage silos, is used to empty the silos and move finished talc to bagging machines or box car loading. Talc is delivered to the portable pump by variable-speed feeders that regulate pump capacity to packing rate.

Keeping Pace with Production

The first effort to keep pace with mounting production was to increase capacity for finished talc. Four flat-bottomed bins were erected next to the four original silos, with branch lines and valves. Both pumps from the grinding mills were thus enabled to fill any of the new bins.

At the same time—since the new bins were not directly above the portable pump—air-activated gravity conveyors, or "Airslides", were installed to convey talc from these new bins to the existing pump for movement to packing. Each Airslide consists of an inclined, rectangular duct separated into two longitudinal sections by a porous membrane. Talc is fed into the upper section, and air at low pressure enters

the lower section. The air penetrates through the membrane, and, because of the uniform permeability of this fabric membrane, the talc is thoroughly fluidized. It flows by gravity from a bin outlet to the track-mounted pump. Each slide is equipped with a cutoff valve operated by air motor. Cutoff valves are actuated by a level indicator in the packing bin.

Wedge-Shaped Bin Economizes on Space

To get even more storage, a fifth, wedge-shaped vertical bin was constructed close to two adjoining silos. Like the other flat-bottomed bins, this one is connected so that both pumps from the grinding mills can fill it. It has an Airslide to carry talc to the portable pump.

Still another bin was added during this initial expansion of storage capacity, bringing the total to four silos with conical bottoms and six bins with flat bottoms. This sixth bin was also equipped with branch lines and valves, enabling it to be filled or emptied by the already installed pneumatic pumping system.

To speed shipping of finished talc, a new packing station was also installed. Product is conveyed pneumatically by the portable pump beneath the original silos to this second packing station. This completed the initial stage of Gouverneur's expansion.

More recently, the firm began the second phase of its expansion, adding grinding facilities, a third packing station and a new silo located about 200 ft. from the original cluster.

To provide separate facilities for handling the exceedingly fine talc from the new grinding mill, and to keep up with increased output, four additional pneumatic pumps were installed.

First of these was a new, portable pump that runs on the same track as the original portable unit. Separate conveying lines are being put in to handle talc of different grades. Normally, each pump will

be assigned to convey talc within a certain range of fineness. However, the system is highly flexible, and either pump can discharge into either line.

Another new pump is mounted beneath the first of the new silos. Although stationary at present, it will eventually be track-mounted and discharge talc from all of the new silos as they are erected. At present, this pump delivers product from the new silo to the second packing station.

A third pump sends talc from the new grinding mill to the wedge-shaped, flat-bottomed bin and to the first of the new silos.

The fourth new pump is used for emptying the wedge-shaped bin. It can deliver either to two of the original silos or to the new silo.

There are two, separate final grinding operations, depending upon the fineness of the talc being made. To produce the coarser particle sizes, the talc undergoes regular grinding. From the five-ton bin it is fed by a constant-weight feeder into a 10-foot by 66-inch conical mill. The mill is Silex-lined and loaded with 32,000 pounds of high-density grinding media. Ground talc from the mill goes to a separator with a double whizzer that is in closed circuit with the mill. Finished product is screened to remove any foreign matter. The 5 inch pneumatic pumping system transports the talc to storage.

For special uses, Gouverneur also produces extremely fine talc in micron and submicron particle sizes. To produce these finer grades, the talc goes not to the conical mill but to fluid energy mills.

Handling Finished Product

Finely ground talc leaving the fluid energy mills goes through cyclone collectors. The finished product is then screw-conveyed to a vibrating screen to remove any foreign matter. Screened product is pneumatically conveyed by the 8 inch pumping system to storage. Samples are taken by a pipe-line sampler.

(More on next page)

All products from both regular grinding and fluid energy milling are packed for shipment with the same equipment. The 8 inch rail-mounted portable pump under the storage silos empties bins and silos, transporting talc to a bin over the four-tube packers. Talc products are packed in 3-ply and 4-ply, 50-pound sewed valve bags that vary in size for the different finenesses of talc. Filled bags drop onto a wire mesh conveyor and are carried on roller conveyors into box cars for shipment. Bulk shipments are also made in paper-lined box cars.

Handling Flour in a Modern Bakery

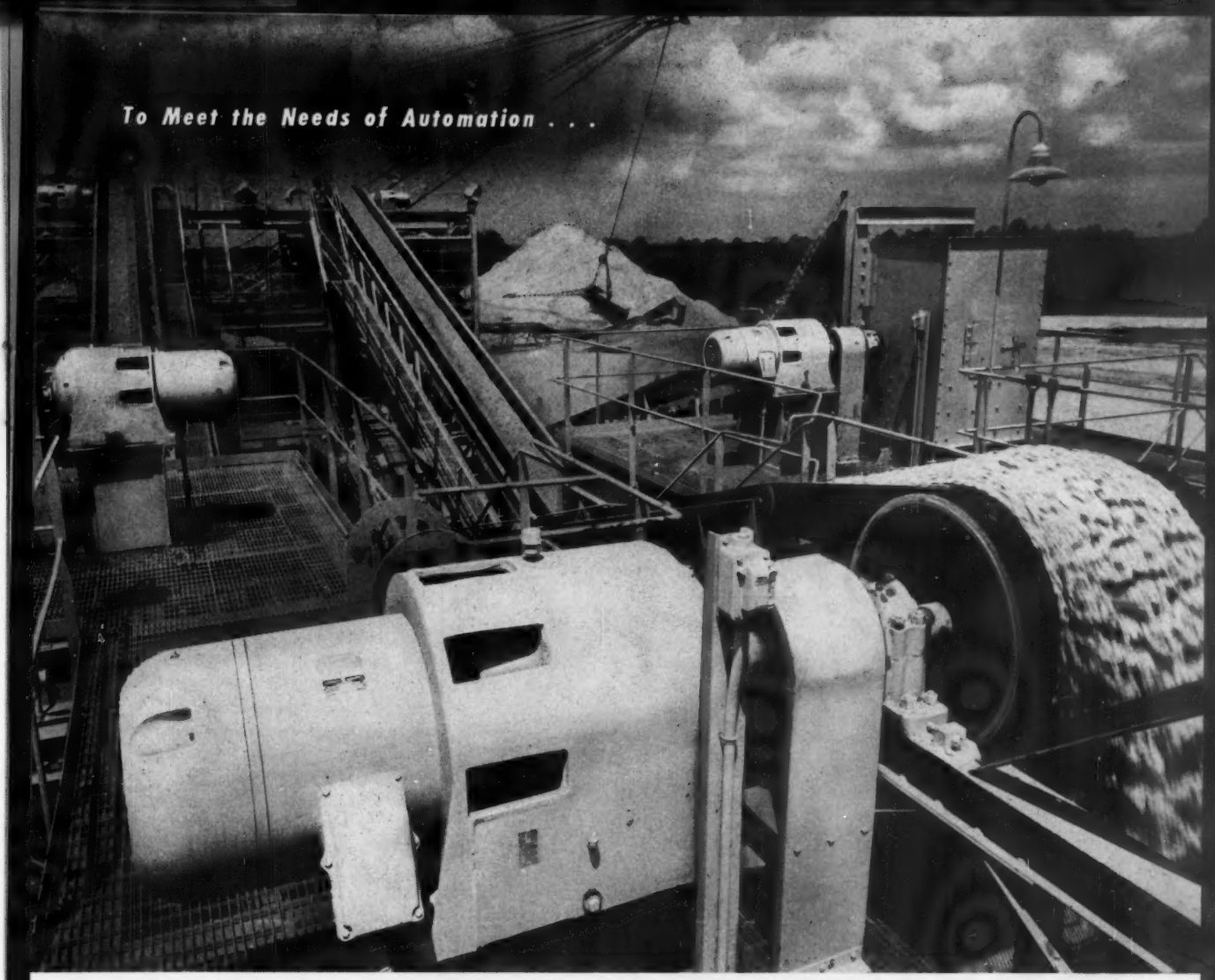
One of the most modern pneumatic installations in a bakery is at the Newark, N. J. plant of Ward Baking Co. The system pneumatically delivers flour from a hopper in the basement . . . to storage bins on the first floor . . . and then to dough mixers on the fifth floor . . . at the rate of 200 pounds per minute.

With the old system, flour was dumped into hoppers and conveyed mechanically to a large wooden storage bin. From this bin it was carried by a variety of devices to arrive at scales located above the dough mixers.

With this system, flour could collect in dead spaces or on structural obstructions, and the entire system had to be virtually dismantled to expose these points for cleaning. Flour could also escape from enclosures and cover nearby areas with a thin white coating. These limitations necessitated bi-weekly cleanings to remove coating and to clean surrounding work areas. Usually done on Saturday, this required four mechanics and 12 porters to completely dismantle, scrape down and clean the entire system.

System is Self-Cleaning

The self-cleaning feature of the pneumatic system has eliminated the old "field day." And special efforts have been made to prevent



General Electric Gear-Motors Prove Reliability in Continuous Conveyor Operation

For increased productivity, reliable drives are important in maintaining a constant flow of materials through your plant. With General Electric gear-motors you can expect the same dependable service experienced by a large southeastern cement plant. There, G-E gear-motors driving the conveyor system, operate continuously. In five years these motors have required no maintenance other than infrequent oil changes.

In addition, General Electric gear-motors give you several other bonus features:

EASY INSTALLATION—Alignment is simple because unit is on a single base with gears properly lined up and locked in place at the factory before shipment.

LESS MAINTENANCE—Down time is reduced because gear-motors do not require the frequent inspection and replacement common with other methods of speed reduction.

QUIET OPERATION—Balanced distribution of the load throughout the unit means less noise.

MORE COMPACT—Packaged gear-motor design accomplishes speed reduction in a minimum of cubic feet, saves valuable space.

General Electric's new decentralized Gear Motor and Transmission Components Department is devoted solely to the design and manufacture of all types and sizes of gear-motors. For more information write for bulletin GEA-6027, Section 851-3, Schenectady, N. Y., or contact your G-E Apparatus Sales Office or nearest gear-motor supplier. *Gear Motor and Transmission Components Department, General Electric Co., Paterson N. J.*

WHERE GEAR-MOTORS CAN SAVE YOU MONEY*

**A partial list of many possible applications.*

CONVEYORS—belt, assembly, bucket, chain or screw.

FEEDERS—both belt and screw.

ELEVATORS—buckets under heavy or uniform load and centrifugal or gravity discharge.

AGITATORS, MIXERS AND SCREENS—for both liquids and solids.

CRANES AND HOISTS—heavy duty main hoists and skip hoists, for travel motion and trolley motion.

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dust collection on exterior members of the system. For example, structural members are of round piping, rather than the customary angular shapes.

Flour Received in Bags

Flour arrives at Newark in bags which are emptied into a bag dump hopper. This discharges through rotary airlock valves into a transport tube which carries the flour to a sifter, then an entoleter, and finally to storage. The bag dump is divided into two sections, each having a discharge aperture which can be regulated to permit flours to be mixed in ratios of up to one in ten. A positive pressure Roots-type blower supplies the airflow which propels the flour once it passes through an airlock into the conveying line. Storage-bin level-indicators signal the bag dump location when bins are low and will automatically shut down the blower should the high-level point be passed.

From the bag dump, flour is blown to a cyclone and then discharged into a sifter (Fig. 2.). Exhaust air from the cyclone passes through a dust collector before going to atmosphere. Flour from the sifter passes through an entoleter, then through an airlock to a transport line leading to a steel storage bin. A cyclone exhaust on the bin draws off exhaust air and delivers it to the dust collector for filtering.

Bin Has Two Drainage Points

The storage bin has two drainage points, each of which services three dough mixers. When the operator at the dough mixers needs flour, he pushes a button which automatically starts: (1) a blower which creates the airflow for carrying flour to the mixers; (2) a motor which operates the rotary airlock through which flour discharges from the bin to the pneumatic line; and (3) a small blower which supplies air to an Airslide at the base of the bin for keeping flour flowing to the airlock.

Flour is thus blown from the bin into individual weigh hoppers situated above dough mixers on the fifth floor. Weight of flour required for any one batch is selected by the operator by setting the scale beam poise before pushing the delivery button. The flow of flour automatically cuts off when this preset weight has been delivered to the hopper. To achieve a maximum degree of accuracy, the last few pounds are dribbled into the hopper—the storage bin airlock will still turn but part of the air is automatically shunted around it. As soon as full weight has been reached, the airlock stops the feed into the transport line, and the unwanted amount of flour in transit is blown back into the storage bin. The mixer operator empties the scale hopper into the mixer by push button control.

The transport line from each bin dump passes the three hoppers it services and is connected with each by a branch line and valve. When flour is being diverted to a given hopper, the valve is "open."

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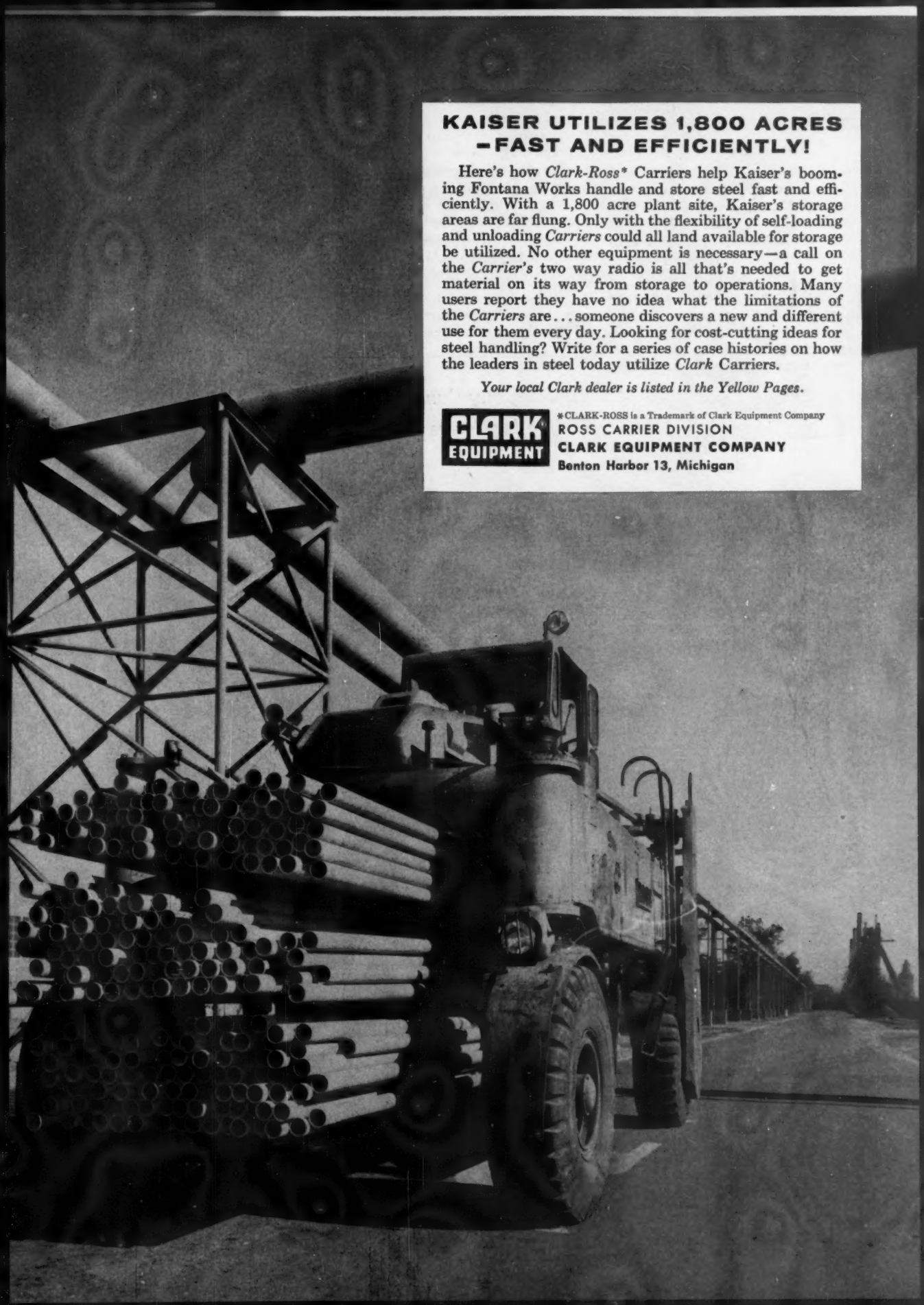

KAISER UTILIZES 1,800 ACRES —FAST AND EFFICIENTLY!

Here's how *Clark-Ross** Carriers help Kaiser's booming Fontana Works handle and store steel fast and efficiently. With a 1,800 acre plant site, Kaiser's storage areas are far flung. Only with the flexibility of self-loading and unloading *Carriers* could all land available for storage be utilized. No other equipment is necessary—a call on the *Carrier's* two way radio is all that's needed to get material on its way from storage to operations. Many users report they have no idea what the limitations of the *Carriers* are... someone discovers a new and different use for them every day. Looking for cost-cutting ideas for steel handling? Write for a series of case histories on how the leaders in steel today utilize *Clark* Carriers.

Your local Clark dealer is listed in the Yellow Pages.

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ROSS CARRIER DIVISION
CLARK EQUIPMENT COMPANY
Benton Harbor 13, Michigan

CONVEYING BY AIR

Continued

If all three are closed, the flour loops back to the storage bin, and when the line is clean the blower shuts down. Exhaust air from the scale hoppers is filtered through a dust collector. Provisions have been made for tapping off dusting flour by means of a cyclone exhaust hopper located on one of the upper floors.

Ward has found that, in addition to improving sanitary conditions and eliminating dismantling and clean-up requirements, this plant saves over 200 work-hours per month. In addition, loss of flour through breakage and leakage has been reduced substantially and it is believed that the additional aeration received by the flour tends to improve the texture of the finished product.

For illustrations, FLOW thanks the following firms: Dracco Corporation, Fuller Company, and The Young Machinery Company.

CABLE TRAMWAY . . .

(*Continued from page* 87)

picks it up with the cable engagers and takes it off the rail.

At the loading end, the rail curves around in a semicircle. The hopper, at the middle point, is actuated by a steel weighing beam. When a ton of clay has dropped into the bucket, the weighing beam rises and shuts off the flow. A stop —actuated by a mechanism driven by the cable—releases the bucket, which rolls along the rail for about 30 feet until it is picked up by the cable for its trip to the plant. The loading is so timed that the buckets remain 160 feet apart along the line.

Handling In Storehouse

In the storehouse the handling is about the same, except that the buckets are dumped by a movable tripping device which catches a steel arm sticking up above the side of the bucket.

At the elbow turns the bucket leaves the cable on the near side, coasts around the turn on the steel rail, and is picked up by the cable again on the leaving side.

Before the construction of the cable system, Henry Burns had been trying to eliminate the difficulty of clay sticking to everything used in digging and transporting it. An aluminum lining for a steel bucket was tried. It dumped all the clay clean, with no sticking. So an all aluminum bucket was designed. Various alloys were used for different parts. The bucket as now used holds 20 cubic feet of clay—2000 pounds—and weighs about 125 pounds itself. Its trunnions are below the center load line. When tripped, it turns completely over, dumping its contents freely. The company made 220 buckets, of which 187 are in use.

The train system was not satisfactory for a reason in addition to those mentioned above. The clay is all dug in one spot. There is rich clay in one part of the pit, and lean clay in another. A blend of several kinds makes better brick.

Crawler scrapers were tried, and two of them got up to 120 tons per hour. Then two rubber-tired,

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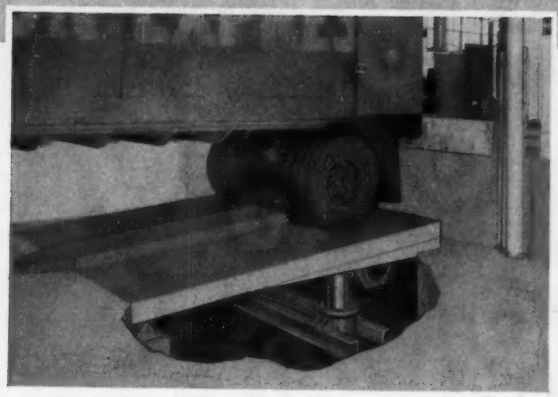
Loading needs automation, too!

ONE OF THESE ROTARY OILDRAULIC® DEVICES
WILL SLASH COSTS, TIME AND LABOR FOR YOU



Rotary TRUCK LEVELER

Saves space . . . handles any highway carrier

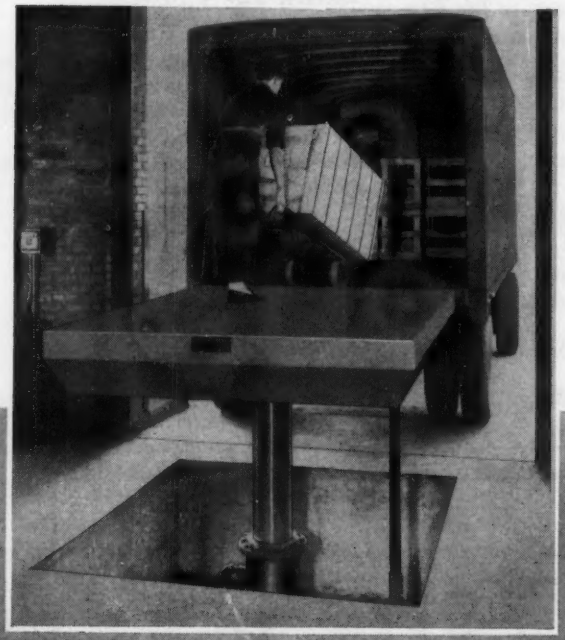
- Hydraulic jacks raise or lower trailer to dock level for fastest loading and unloading.
- Easily installed in pavement in front of loading dock . . . takes up no space.
- 40,000-lb. capacity, 28" travel . . . handles any carrier at any loading dock.
- Dependable, economical hydraulic operation by Rotary Oildraulic electric power unit.

Rotary LEVA-DOCK® RAMP

Speeds loading dock traffic

- Hinged self-leveling ramp saves time, reduces breakage, increases safety.
- Moves up or down automatically to stay level with the truck or trailer bed.
- Compensates for varying truck bed heights.
- Supported by Rotary Oildraulic jack with low-cost electric power unit or compressed air operation.

SEE ROTARY LIFT CO. BOOTH NO. 1101
National Materials Handling Exposition, Philadelphia



Rotary LEVELATOR® LIFT

Permits loading direct from plant floor level

- Lifts heavy loads from plant floor to trucks, freight cars or different building levels.
- Eliminates dock expense . . . buildings can be erected on grade.
- Platform is level with floor when lowered and can be trucked over.
- Capacities to 100,000 lbs. . . . oil-hydraulic operation with electric power unit or compressed air.

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7 cubic yard, high-speed, self-propelled earth movers were purchased. Each of these averages over 90 tons per hour, or more than 180 tons together. They load themselves, and they shave up the clay in thin cuts. They can load rich clay and lean clay alternatively, doing a large part of the blending in the pit.

They haul up over the 100 foot ramp, over the tramway hopper, and dump into the 10 cubic yard aluminum hopper, which fills the buckets as they pass.

To insure a supply of clay through bad weather, Burns designed and built a storage house which holds 50,000 tons—enough for a run of three months. Height from ground level to the ridge is 80 feet so that the bucket line can come in high enough to dump over the entire length of the building. There is a platform at the 50 foot level for men who direct the tripping of the buckets.

A front-end loader works over the top of the pile, pushing clay to slide down a natural slope to a floorlevel hopper.

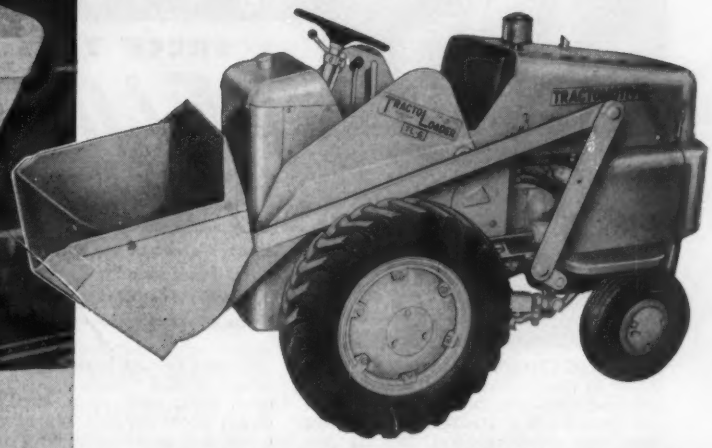
This hopper feeds a 24 inch belt which carriers to a one-day stock above the grinders. Following the grinders are the usual mixing, extruding, cutting to brick size, drying and burning.

Electric Power Drive

A 75 horsepower motor in the storage house drives the tramway, through a fluid drive and gear reducer. This provides slow, even, starting of the cable, and it allows the necessary speeds to suit any production requirements.

A trouble detecting system is installed throughout the length of the tramway. At the loading station, 7200 volts are stepped down to 110-220. One side of the 110 volt line is carried back to the holding coil of the 75 HP drive motor. But it is broken at a telltale on each tower. If it becomes grounded it breaks contact on the 110 volt line, and makes contact with the other side between the control line and the ground. The trouble spot can be located from either end. When the trouble is

BUCKET CAPACITY: ½ cu yd
BRAKE HP: 33.7
SPEEDS: 2 forward; up to 10 mph
2 reverse; up to 20 mph
WEIGHT: 6,100 lb



TRY THIS FOR SIZE IN TIGHT QUARTERS

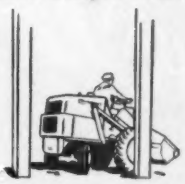
Compact TRACTOMOTIVE TL-6 TRACTO LOADER is a high producer in confined areas

Quickly unloads boxcars Users report it takes only two to three hours to completely unload a boxcar of bulk materials by using the TL-6 and a conveyor setup. Loading goes fast because there's a scooping action with tip-back bucket — and no ramming to get load. You ease bucket into pile and the hydraulic torque converter drive crowds in a heaping load — action is smooth, positive. No gear shifting either — operator just pulls or pushes a lever to go forward or reverse.

Travels through narrow aisles and doorways Compact design makes it easy to move material from one place to another in your plant . . . or to bring in material from outside stockpiles. Over-all length is only 9 ft, 7 in; width 4 ft, 5 in; height 5 ft, 4 in.

And loads are carried low, in a level position, with 50-degree tip-back of bucket — means less spillage, greater stability, better visibility and easier maneuvering.

Makes hairpin turns around columns and posts TL-6 keeps travel time down because it makes right-angle turns around columns and posts. No lost time maneuvering around, either — there is a short, 6½-ft turning radius. And the operator's job is made easier with Power Steering — now standard equipment!



Ask your Allis-Chalmers construction machinery dealer to show you how you can save time and money on close-quarter material handling with the TL-6 Tracto-Loader. See for yourself why

TRACTO is a sure sign of modern design

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Send For Free Descriptive Catalog On The Complete Line Of Tracto-Loaders ▶

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TRACTOMOTIVE CORPORATION, Dept. FL
Deerfield, Illinois

☐ Please arrange a demonstration of the TL-6
☐ Send catalog on Tracto-Loaders

Name .....
Title .....
Company .....
Address .....
City ..... State .....

CABLE TRAMWAY

Continued

corrected the switch is re-set, restoring normal operation.

The plant's ouput is six million bricks a month. It is loaded out to both trucks and railroad cars.

A skidless package for fork truck handling is bound with steel strapping. Bricks are left out at two places in the next to the bottom row, making holes for forks.

Fork trucks have side shifters so that operators are able to place the unit loads tightly into corners and against the sides of vehicles.

In addition to all the other advantages of the cable tramway, it produced a substantial reduction in production costs. With the old system of hauling on the narrow gauge railroad, a crew of twenty-five men was required—for stripping with a diesel power dragline, for digging clay, and loading.

For cable tramway, there is a crew of nine—two operators of earth movers, three men at loading stations, two at the storage house, and two watchers at the elbows. The elbows are to be eliminated soon, and so the two watchers will not be needed. The two Tournapulls do all the stripping when they are not digging clay.

Equipment Notes:

Cable by American Steel and Wire Division, U. S. Steel Co.

Earth movers by Le Tourneau-Westinghouse Co.

E. M. Abramson Dies

Edward M. "Abe" Abramson, president of the Ohio Equipment Company, Cleveland, died unexpectedly last month at his home. A pioneer in the material handling field, Mr. Abramson founded Ohio Equipment in 1911. His firm was the first material handling distributorship in Ohio, and also was FLOW's first franchised distributor. Mr. Abramson was active in the American Material Handling Society, Masonic Lodge and the Al Sirat Grotto.

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"It's all according to plan . . . the I.T.D. engineers make a study of your plant and handling problems, resulting in the Planning Report which you receive."

"But is it really necessary so long as you sell us a Stacatruc?"

"Indeed it is. We are not just selling a Stacatruc, but a handling system—which must suit the circumstances."

"And what does your report tell us?"

"It crystallises the handling requirements, shows where economies can be effected on time and cost. Layout drawings and flow charts are also included."

"But your case study might indicate that a fork lift is not the answer, what then?"

"Yes, that might happen; in which case we would tell you so and perhaps be able to suggest alternative equipment. After all, it is no advertisement to have Stacatrucs used uneconomically; as I was saying, it's all according . . ."

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FORK LIFT TRUCKS

BRITAIN'S BEST MOBILE MATERIALS HANDLING SYSTEM

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P.4732

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STRUCTURAL COMPONENTS . . .

(*Continued from page* 95)

parent advantages. These two conceptions were quite different in characteristics.

Straight-through lines would permit the smallest possible, enclosed, air conditioned packaging room floor space. The "grand piano" shape contributed to the objective of minimum possible floor space in this room. Case sealers of all lines were indicated in the space just outside the packaging room wall to keep the packaging room free from operations requiring delivery of large quantities of shipping containers into the packaging room.

A visitor's, or supervisor's, walkway on an elevated level along one side of this packaging room leads directly into the office building. The following points of interest result:

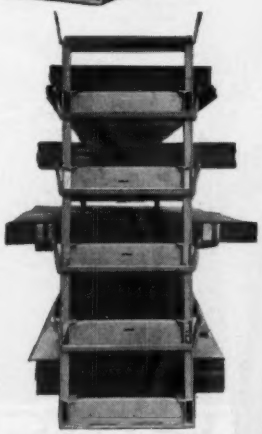
1. The number of columns in the "infeed" half of the packaging room must be double in number to support the overhead second floor manufacturing building area. This is a disadvantage, of course, to material handling. Columns take floor space and sometimes interfere in desired equipment location.
2. Some lines requiring fewer or shorter length machines must have correspondingly longer conveyors between machines or work stations in this scheme.
3. This straight-through-packaging room divides the storage of materials in the surrounding warehouse into two sections: packaging materials, such as bottles and tubes on the in-feed side of the packaging room and finished goods on the out-feed side. Since both ends of the lines need fork truck service at the same time, there is little chance to consolidate and combine truck movements between raw, packaging and finished materials. More trucks and larger crews result.
4. To walk from one line to an-

YOU CAN SAVE FLOOR SPACE

USE PORTABLE Heavy Duty SHEET STEEL RACKS

CONSULT P-S FOR THE BEST

PICK UP AND TIER TO ANY HEIGHT



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Why let outmoded methods waste valuable floor space and man-hours?

Handle and store sheet steel of any width, any length, any thickness with Palmer-Shile Portable Heavy Duty Sheet Steel Racks. And you can store more stock tonnage, too!

Tier racks containing a variety of sheet steel stock one upon the other to any height, using automatic tongs suspended from an overhead crane. Every rack is easily accessible for stock selection convenience. Built to specifications.

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STRUCTURAL COMPONENTS

Continued

other, supervision and service personnel must either go outside the room to use the higher level walkway.

5. Only a small amount of daylight is available at one far end of this room.

The plot plan showed a conception of the complete plant on the selected site with an office building having an angular wing to contour with the existing highway. Convenient rail siding, access roads, parking areas and future expansion possibilities were indicated.

The second concept of packaging room design was indicated on another layout plan. It comprised U-shaped lines with the in-feed and out-feed of each line being on the same side of the packaging room. This consolidates all trucking, in-feed and pack-off operations in a single, long service bay. Notice the following points of advantage:

1. Good daylight along one complete side and end.
2. Easy supervisory and service personnel access.
3. Possibilities for consolidating truck movements between finished goods pallets and packaging material pallets in the service aisle.
4. Possibilities to combine work operations and reduce personnel on the in-feed and pack-off operations in this one service area.
5. Greater flexibility in storage of materials in the warehousing area which is not split by the packaging room.

The next complete plant layout also incorporated a U-line packaging room. Concurrently with the packaging room design, a study of warehouse structural requirements was in progress. This involved column spacing, head room, lighting, floor loading, window and truck dock design.

Structural steel construction was selected for the warehouse rather than reinforced concrete construction because of the fewer number and smaller size columns required,

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Exaggerated picture? Sure . . . but any one of these shelving problems may be troubling you . . . sagging shelves, insufficient storage space, inflexible wooden shelving, poor layout. To cure your shelving problems, call your Deluxe steel shelving dealer. He will engineer efficient and flexible shelving installations, then supply you with additional shelving racks as fast as you need them! Deluxe dealers are backed by the finest-designed and sturdiest shelving made.

These Deluxe features allow you to install Deluxe shelving at lowest cost.

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2. Boltless adjustable shelf brackets—complete adjustability without tools.
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STRUCTURAL COMPONENTS

Continued

giving higher percentage of usable floor area. Column spacing was adjusted in a pattern which would permit planning of aisle and pallet placement for greatest floor usage.

An interesting problem was encountered here. The company had recently purchased several thousand each of two sizes of pallets, 3 x 4 and 4 x 4. It was doubtful which size would be the ultimate standard for several reasons. So, the stacking pattern for each size pallet was carefully worked out, using various possible column spacings within structural limitations. In this way, the column spacing finally selected permitted stacking of either 36 4 x 4 pallets or 48 3 x 4 pallets in each bay. This accomplished utilization of the same pallet area (576 square feet) whether the 3 x 4 or the 4 x 4 pallets are used. Main aisles were 13 feet wide and cross aisles 10 feet, allowing good maneuvering and passing space.

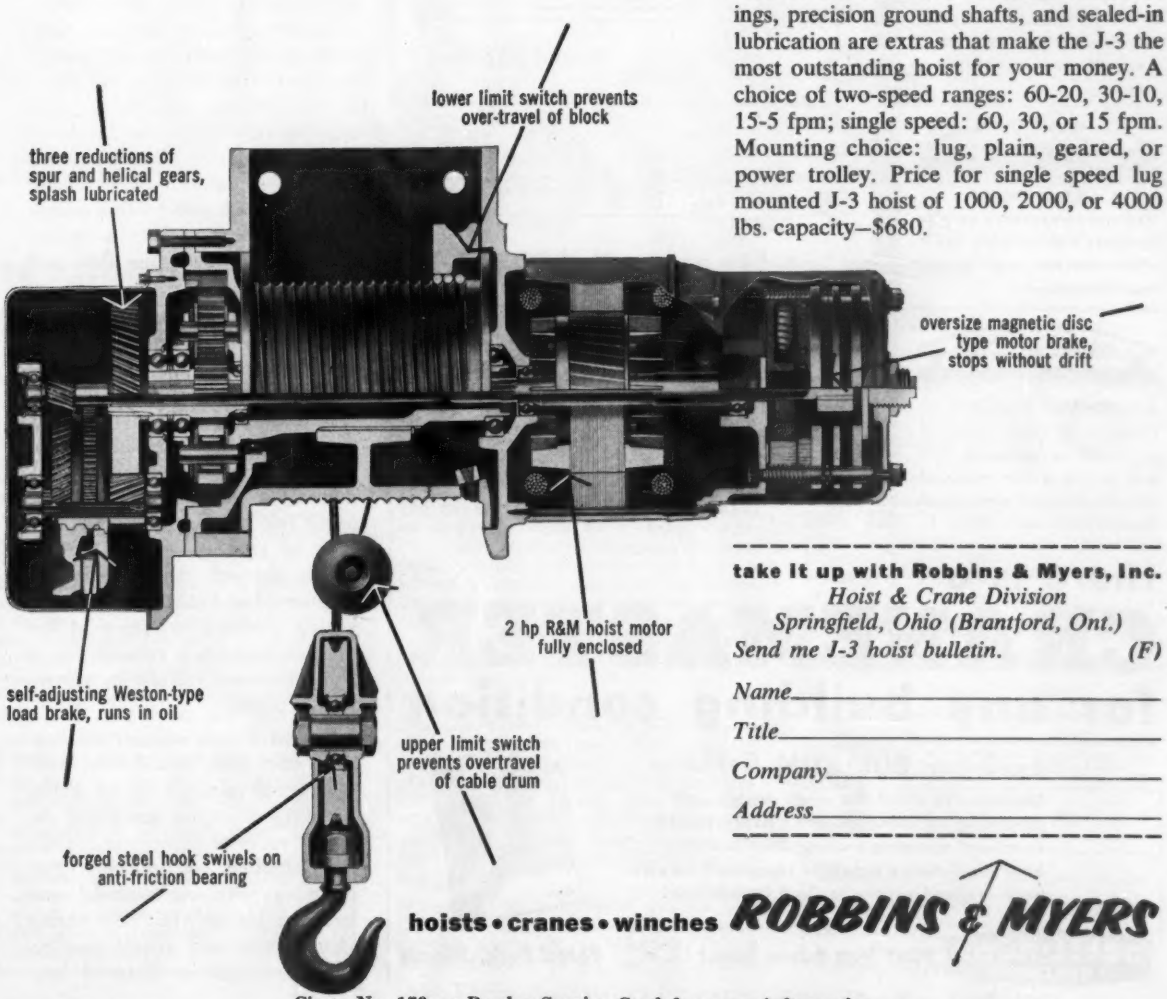
Headroom in the warehouse was governed by and adjusted to the maximum pallet stacking possibilities. Actual stacking tests of glass bottled goods and fragile powder products were made to establish limits. In one warehouse design where such preliminary studies were omitted, a structure was completed with 50 percent more headroom than could be utilized because of product crushing by exceeding safe stacking limits. The accumulation of thorough and accurate basic and governing data before design completion is essential to avoid costly mistakes.

A further refinement of the discharge end of the order make-up conveyor comprises a continuation of the conveyor by powered belt to deliver large volume orders directly to waiting carriers at the truck dock. As the system has worked out, a 5-man crew can ship 4000 cases a day with ease.

The final plot plan, showing the plant in its finally decided shape and relative size, had a T-shaped, two-story administration building for most efficient grouping of office functions. Employee entrance, locker rooms, personnel depart-

too much hoist?

R&M J-3 hoists have specific points of superiority that go beyond what hoist users usually consider "adequate." The 2 hp R&M high torque hoist motor, designed and built for full-time, full-load hoist duty, has the highest motor rating found in any standard hoist (30 min., 55 degrees C.), giving it ample reserve for accidental overloads. Power is transmitted through three reductions of cut helical and spur gears, instead of the usual two. Oversize ball bearings, precision ground shafts, and sealed-in lubrication are extras that make the J-3 the most outstanding hoist for your money. A choice of two-speed ranges: 60-20, 30-10, 15-5 fpm; single speed: 60, 30, or 15 fpm. Mounting choice: lug, plain, geared, or power trolley. Price for single speed lug mounted J-3 hoist of 1000, 2000, or 4000 lbs. capacity—$680.



take it up with Robbins & Myers, Inc.
Hoist & Crane Division
Springfield, Ohio (Brantford, Ont.)
Send me J-3 hoist bulletin. *(F)*

*Name*_____
*Title*_____
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*Address*_____

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STRUCTURAL COMPONENTS

Continued

ment, cafeteria and first-aid rooms were located in the connecting wing. An executive garage was attached to the administration building, while the employee parking area was conveniently arranged opposite the employee entrance.

A tank farm served by the access road is also located between the main plant and the road for bulk storage (in buried tanks) of alcohol and other liquid ingredients which are pumped through pipe lines into the plant.

A rail siding is arranged along the back (south) end of the plant for rail receiving and shipping. Elevations are planned so that freight car floors are at the same height as factory floors for easy loading with fork trucks. A ramp from factory floor leading down to the access road permits mobile equipment to leave the factory and run out onto the roadway system.

One interesting feature is a pool in front of the administration building. In addition to its scenic effect in the visitors' parking area, it serves the useful purpose of supplying cool, conditioned water for cooling jacketed kettles and other manufacturing equipment used in the process. High windows permit light to be adequately projected into the building interior. Also, perimeter stacking and maximum use of floor space is accomplished, and the special, continuous span or lintel window construction eliminates brick piers.

The powder manufacturing process equipment for the plant incorporates some interesting material handling features. Talc imported from Italy in 100-pound bags is transported on pallets by fork truck and elevator from warehouse storage to the second floor mixer loading stations where a daily supply is maintained. Four large-capacity mixers are supported in floor wells to facilitate easy waist-height loading of talc directly from the pallet stacks into dump hoods. Perfumes and other ingredients are also added in the dump hoods. When completely mixed, the load is dumped by a remote controlled slide valve into a micro-pulverizer supported on a mezzanine floor between the first and second floors.

The required "in-feed" air to the pulverizer is augmented by an induction fan on the far end of a micro-collector located on the second floor and utilized to collect the pulverized powder and deliver it to the hopper, feeding the vacuum filler machine in the packaging line on the first floor. This type of system where the air stream through the pulverizer is augmented and utilized as the conveying medium to transport the product through a vertical rise is being used successfully in a number of plants.

Recent trends in material handling have been toward more complete mechanization in all fields. Building structures are being designed to meet process and material handling requirements. Preplanning with scale model and template layout equipment assists visualization and avoids interference problems in material han-

Look under the lightweight aluminum bed and . . .

see these free-swivel casters — another reason why Magcoa/Tobey trucks are easier to push

That 30" x 48" truck bed in the photo weighs a mere 45 lbs. . . . yet it will support loads in excess of 3,000 lbs. But light weight is just part of the Magcoa/Tobey story—look at the casters, too! They are one more major reason why Magcoa/Tobeys are the easiest pushing, easiest steering trucks on the market. Think of the dollar savings this means.

The real cost of a truck is the *cost of moving it!* How much to move the average truck? Based on $1.50 per man-hour plus overhead . . . probably at least $3,000-$4,000 a year. If you can save as little as 5% of that cost through increased efficiency—you save $200 per man, per year, *every* year. Magcoa/Tobey lightweight beds and heavy-duty casters assure you of that important 5% increase in efficiency . . . usually more.

SUPERIOR DESIGN AND CONSTRUCTION

Big tapered roller bearings—spaced wide apart

Large-diameter spindle—not a skinny "king pin"

Available in a wide range of wheel sizes in most types—molded rubber tread, zero pressure, pneumatic and phenolic (plastic).

These casters are different. Magcoa/Tobey swivel casters feature big, tapered roller bearings . . . placed at opposite ends of a long, large-diameter spindle for complete freedom from binding even under full load! A labyrinth seal retains lubricant, keeps dirt out—virtually eliminates maintenance. These are free-swivel action casters that give easier starting and steering, elimination of wobble . . . longer caster life.

Test and compare—Test a Magcoa/Tobey truck in your operation along with any other make of truck. Watch which truck your people grab first when they have a choice—Magcoa/Tobey every time. It's less work to push a Magcoa/Tobey truck—your people handle more loads in less time with less fatigue. You operate at a lower cost.

What's your problem? Name the "special" kind of truck you need; there's probably a Magcoa/Tobey *standard* truck to do the job. There are over 100 styles and sizes for every type job from handling food to handling greasy industrial products. You get specialized equipment for specialized jobs . . . *at standard equipment prices.*

Send for a copy of the Magcoa/Tobey Data File. It gives full details and specifications . . . the complete Magcoa/Tobey cost-saving story. No obligation—just use the coupon below.

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Company_____

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City-Zone-State_____

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STRUCTURAL COMPONENTS

Continued

dling. Few actual standards of column spacing, headroom or other similar data have been developed, since each material handling problem has its own peculiar influencing factors and conditions.

Thus, the best course for industry to follow when faced with a complicated material handling problem is to conduct an engineering survey to develop the best solution. Conveyor and industrial truck companies have engineering experts ready to lend helpful service, usually free of charge. Some of the current conveyor catalogs are virtual handbooks of technical data and suggested schemes for meeting a great variety of problems.

Finally, consultants are available in conducting surveys. Such consulting service is concentrated to solve a specific problem without taking plant personnel away from their other important operating problems.

MHS NEWS FROM THE CHAPTERS

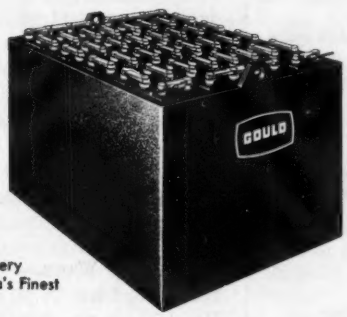
ROCHESTER, N. Y.—A 20-minute film strip on "Techniques of Making Plant Layouts" was presented to the Rochester Chapter of AMHS at a recent meeting. The film was shown by **E. A. Troutman,** senior plant engineer for the Manufacturing Engineering Services Department of General Electric Company. Troutman outlined for the members the standard techniques and materials currently used at General Electric in the making of physical layouts.

PHILADELPHIA, PA.—A joint meeting of the Philadelphia Chapters of both AMHS and SIPMHE was conducted recently. The meeting was highlighted by an address by **John Farrington,** packaging engineer for Jiffy Mfg. Co. Farrington spoke to the combined groups on the subject, "An Analysis of Packaging and Handling Costs."

JERSEY CITY, N. J.— **Walter C. George,** director of research for the Gaylord Container Corp., recently addressed the New Jersey Chapter of AMHS, describing the work currently being done to improve packaging methods through the development of new types of corrugated containers. Models of many successful developments were shown, and the close interrelations of material handling and packaging were stressed.

MONTREAL, P. Q.—The First Canadian National Material Handling Show, sponsored by the Montreal Chapter of AMHS, will be staged in the Show Mart, Montreal, Sept. 30 through Oct. 4. Ac-

PLAY SAFE... buy the battery that gives you "extra runs" every year.



Gould Industrial Truck Battery —America's Finest

Gould application engineers provide you with a continuing service that helps you keep batteries running longer. Try us and see.

Gould-National Batteries, Inc., Trenton 7, N. J.

More Power to you from Gould

gould BATTERIES

Always Use Gould-National Automobile & Truck Batteries

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Continued

cording to Show Chairman **Emile Dupre,** plans are now underway to conduct a material handling conference in conjunction with the show. Outstanding lecturers, with international reputations, are being lined up for the conference. The exposition is the outgrowth of a regional show conducted by the Montreal Chapter in 1954. It is being conducted so that men engaged in material handling in Canadian industry may have an opportunity to keep up-to-date with the latest techniques and equipment.

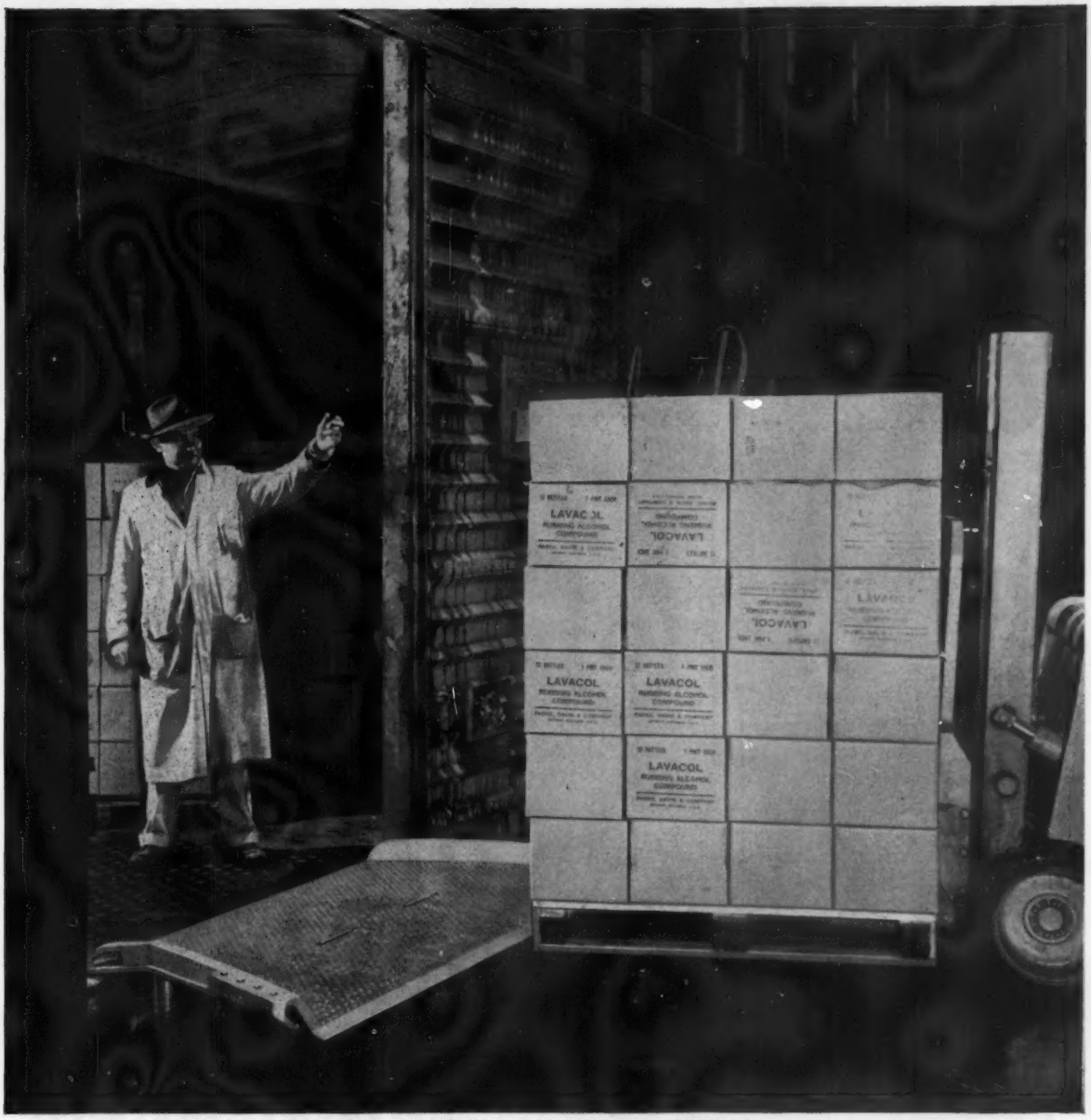
Emile Dupre, (seated), chairman of the Canadian National Material Handling Show and Conference, checks the floor plan with three prominent material handling personalities. Standing (left to right) are Bert Jones, national president of AMHS; Sidney Kom, president of the Montreal Chapter; and Murray Hayes, chapter president during the organizing of 1954 show.

CLEVELAND, OHIO—John W. McReynolds and H. S. "Bert" Jones, national presidents of SIPMHE and AMHS respectively, were both in attendance as the Cleveland area Chapters of the two groups conducted a joint meeting recently. Designated as "Bosses' Night", the meeting marked the first time that national presidents of both groups were in attendance at a gathering of this kind. Featured speaker of the event was **Hamilton Beatty,** assistant general sales manager of the Austin Company. He addressed the group on the subject, "Applying Enginomics for Better Material Handling."

ST. LOUIS, MO.—A plant tour of a shoe manufacturer's distribution warehouse was the feature of a recent meeting of the Missouri Division of SIPMHE.

HAMILTON, ONT.—The Hamilton Chapter of AMHS was addressed at a recent meeting by **Sam H. Isaacs,** president of S. H. Isaacs & Associates, on the subject of handling layouts and planning. Isaacs emphasized education and instruction as the proper approach to a solution to the problem of recognizing the needs for material handling equipment.

SEATTLE, WASH.—"Preparation for Waterborn Transportation of Goods" was the featured topic of a recent meeting of the Seattle Chapter of SIPMHE. The meeting was addressed by **Joe Buchalter,** material handling engineer for the Weyerhaeuser Timber company.



Two PARKE, DAVIS employees can easily handle this light, strong magnesium dockboard.

Parke, Davis moves products over lightweight magnesium dockboards

Materials handling problems vary considerably at Parke, Davis & Company, major pharmaceuticals manufacturer. They're handling fragile 6-ounce bottles one day and ponderous processing equipment the next. But all these shipments have one thing in common, they are moved rapidly and safely over magnesium dockboards.

Parke, Davis employees like magnesium dockboards because they're lightweight and easy to lift, carry and position. They are used on both their rail dock and truck docks. (One board is fourteen years old and still in everyday service!) In the picture above, a lift truck weighing over three tons is about to move across a magnesium dockboard.

For lightweight magnesium materials handling equipment —dockboards, loading ramps, hand and platform trucks— contact your nearest supplier. For information about magnesium, contact the nearest Dow sales office or write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Department MA 1410S.

YOU CAN DEPEND ON DOW

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PARTS DISTRIBUTION . . .

(*Continued from page* 118)

involved the use of a great variety of types of containers. To increase the efficiency of packaging and handling, and to take full advantage of the facilities available in the new warehouse, Mack's engineers devised a large wooden container which had a built-in pallet. Ideal size of the box was found to be 36" x 36" x 30".

Unfortunately, the cost of constructing the wooden containers was excessive. The next objective was to find a pack which had the same protective and handling advantages, but which provided them at lower cost. After experimentation with 200, 275 and 500-pound single and double-wall corrugated boxes the solution was found in a triple-wall 900-pound test corrugated bulk container. It features an expendable pallet.

Pilfer-Proof Top

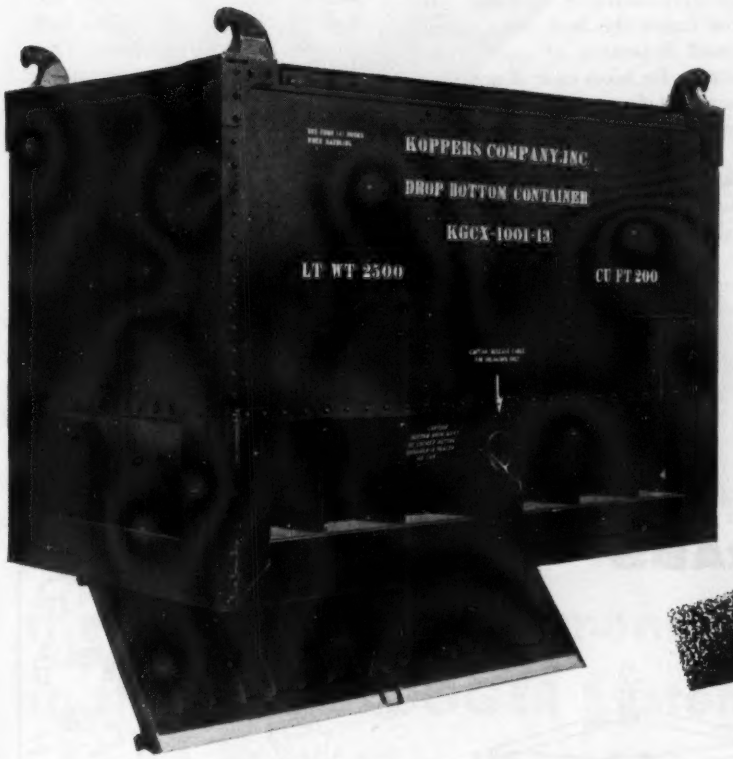
A specially designed pilfer-proof top on the bulk pack, combined with steel strapping, provides insurance against theft. Strength of the board is more than adequate for almost any handling situation which the packs will experience. For storage, it provides vertical strength which is great enough to permit safe double-stacking of filled packs. In approximately two years of use there have been no complaints from recipients regarding bursting or breaking open of the packs.

Because the boxes are purchased on a monthly basis and because they are received by Mack in a knocked-down condition, packaging material storage—formerly a serious waste of space—is now no problem. The packs can be reused many times, an important feature to branches who must sometimes return slow-moving items to the main warehouse. Now, they can make such shipments in reliable shipping containers without having to maintain a supply of new boxes.

Photos courtesy Tri-Wall Containers, Inc.

Now

A YOUNGSTOWN DROP BOTTOM CONTAINER FOR COKE HANDLING



Your easiest, most efficient, economical and fastest way of handling coke

The illustrated drop bottom container has been designed primarily for the handling of coke. The container provides an exceptionally large cubical capacity, up to 325 cubic feet, and a load capacity up to 11,375 pounds.

The container preserves intact the lumps of coke loaded into it, thereby greatly minimizing the quantity of fines normally produced by other methods of coke handling.

The speed of unloading Youngstown drop bottom coke containers exceeds that of other means of coke handling. The containers are lifted from the cars in which they are transported, their load easily, quickly and completely discharged at the point of use or into bins and then immediately returned to the cars. The number of man hours required to unload a car of containers is materially reduced and the time and expense of intermediate handling is eliminated.

The substantial savings effected in the cost of handling coke in Youngstown coke containers becomes evident. These savings soon pay for the cost of the containers. Youngstown drop bottom coke containers are self-liquidating.

Consult with Us for Improved Handling of Your Bulk Materials

THE YOUNGSTOWN STEEL DOOR CO.

CAMEL SALES COMPANY • CAMEL COMPANY LIMITED

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COST-CONSCIOUS PACKAGING . . .

(*Continued from page* 123)

aging and Material Handling Engineers.)

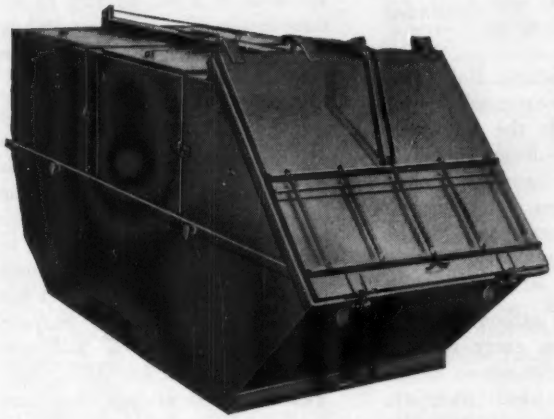
Transformers are secur .d in drums by bolts and mounting brackets on the drums' sides. Where necessary, fibre sleeves are used for additional bracing. The packaging operation starts on the assembly conveyor with the man who makes the final checkup and visual inspection of each transformer. He takes care of any final paint touch-ups which might be necessary and then places an empty drum on the conveyor, next to the transformer. He uses an overhead hoist, equipped with a manual grab, to pick up the unit and to lower it into the drum. He then pushes the drum down the conveyor to the next operation.

The drum, containing the transformer, proceeds down the conveyor to a drilling and bolting operation. There, holes are drilled through the side of the container, matching holes in the transformer hanger, and bolts are inserted. Two additional holes are drilled into the container sides, near the top metal band. Purpose of those holes is to provide for safe insertion of hooks wherever the unit is lifted with overhead equipment in Wagner's warehouse or in a customer's plant.

One of the secrets of the success of the new transformer pack is the method devised for closure. Ordinarily, the type of drum we use would rely some kind of lever lock to hold the cover in place. That type of closure was unacceptable to us, however because of one minor detail. A lever type lock requires that the top band of the drum be crimped inward all the way around. The result is that the opening at the top of the drum is a full ¾-inch smaller than the rest of the drum. We could not afford that much waste.

Because the transformer is bolted into place at the side, there is no need for a type of top closure which can support the weight of the contents in the event that the container is turned upside

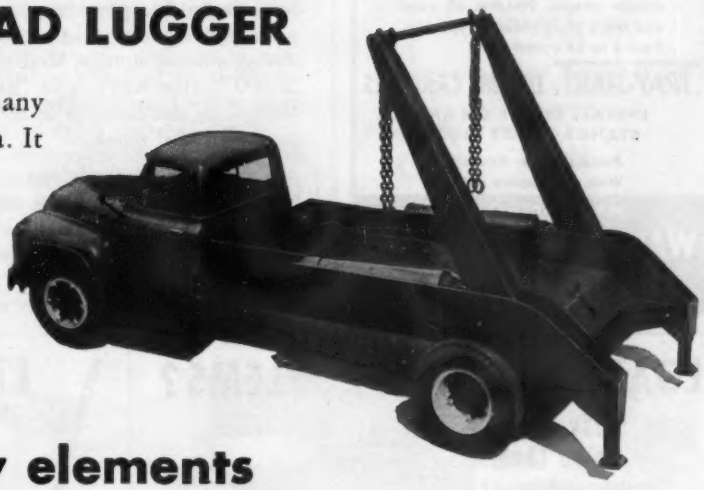
This is a CONTAINER



—one of several Load Lugger types in which you can safely store all kinds of materials—rubbish, scrap, bulk—solids, liquids, gases. Load Lugger containers are all-steel welded construction, leak-proof, vermin-proof, odor-proof. Capacities to 14 cu. yds.

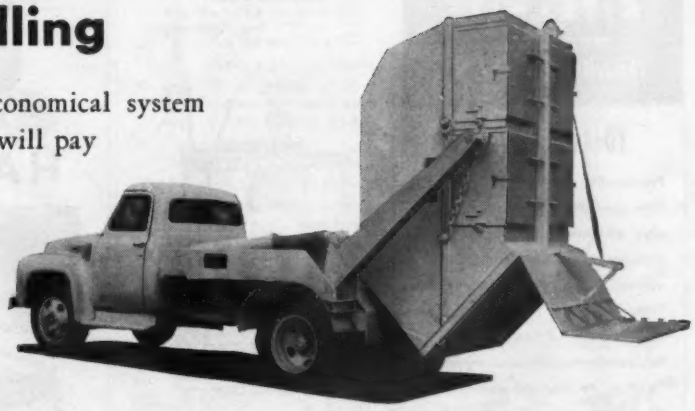
and this is a LOAD LUGGER

Mounted on your truck, it services any number of containers in a wide area. It replaces full containers with empties, transports and dumps the full ones clean and fast, or spots them as temporary "storage bins". Only one man, the truck driver, is required.



they are the key elements in the LOAD LUGGER System of materials handling

—the most flexible, efficient and economical system known—your key to real savings. It will pay you to send for performance facts and figures. Do it today!



LOAD LUGGER

BW

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EXPORT SALES: BORG-WARNER INTERNATIONAL CORP., CHICAGO
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COST-CONSCIOUS PACKAGING

Continued

down during handling. Hollis was able to devise an extremely simple spring clip to do the job. Four are used on each drum. They provide inexpensive insurance against premature opening and help reinforce the top metal bands of the drums when they are lifted by hooks.

The packaging method has more than satisfied our every requirement. Dust and dirt are no longer problems. An asphalt barrier, buried in the side wall, two plys from the outside, provides positive protection against moisture, even during outdoor storage. More than 30,000 units have now been shipped in the drums with no reports of actual damage.

There is now ample space on the outside surface for any necessary identification and advertising messages. Transformers arrive at the point of use looking brand new, no matter how long they may have been in storage and transit.

We would be proud of the package even if it did nothing to reduce costs, because of its many other advantages over the previous method.

But we at Wagner Electric are cost-conscious . . . we study the economy of a package as well as its other advantages. The true value of the transformer package becomes evident when we add to the preceding points the savings which it has made possible. It has enabled us to reduce storage space requirements by 25% and tare weight has been cut 35%. Substantial freight savings have been made and because drums can be handled efficiently by hand truck, lift truck or hoist, handling costs have been reduced. Packaging costs have been cut approximately 75 cents per transformer.

As we stated at the start, when a packaging department becomes cost-conscious, the results can be astounding and the benefits felt throughout the company. We proved that at Wagner Electric Corp.

EXCESS INVENTORY . . .

(*Continued from page* 91)

Basic restaurant commodities in institutional-size packages are kept in a separate part of the warehouse, in their own order-pick line. The basic restaurant orders are sent out once a week.

More than 200 items for the food specialty store are kept in still another section, also with a private pick-line. This store features many private labels of expensive, premium products, many of which are not carried in Hillman's grocery sections. Orders are picked daily.

Bagged flour and sugar is stacked three pallets high, with eighteen 100-pound bags to a pallet. Guards on the corners of the special pallets protect the bags from damage by lift-trucks moving along the narrow aisles. Aisle widths have purposely been kept narrow to provide extra storage space, and high-lift straddle trucks take full advantage of this feature.

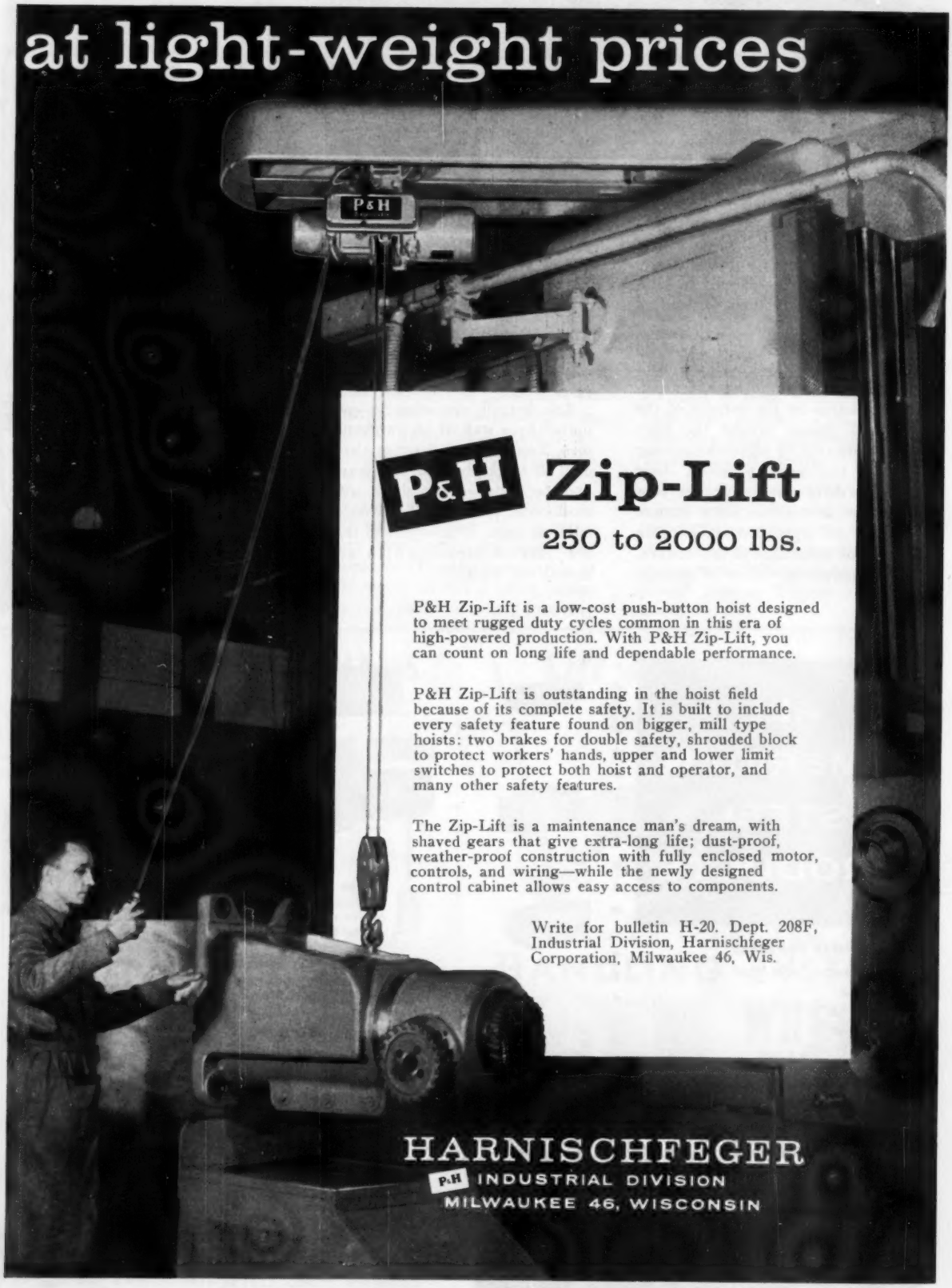
Experimental "drive-in" storage racks will probably be installed this year to add storage capacity on flour and paper products, where poor stackability reduces use of maximum available cubage.

Frozen Foods Handling

Cold storage and frozen foods are palletized just like dry groceries, and are handled by lift-trucks in the coolers and freezers. The freezer contains about 3000 square feet of space, with 14 foot clearance. It is laid out like a miniature warehouse, with floor bays for fast moving merchandise and pallet racks providing overhead storage for slower items. About 140 items, totalling approximately 9000 cases, are on hand; weekly movement is about 2400 cases.

The overall operation is conducted by a staff of 16 warehouse men, 2 supervisors, 1 office clerk, and 10 truck drivers. The warehouse operates on two shifts, with most order picking and deliveries made at night. It is estimated that 600 tons of merchandise are moved out weekly.

here's a heavy-duty hoist at light-weight prices



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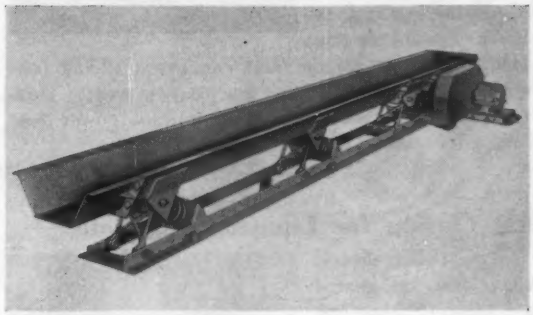
Bucket Is 4 Attachments in One

The multi-purpose Drott "4-in-one" bucket is now available as optional equipment for the Frank G. Hough Company's entire line of Payloader tractor shovels. The attachment can be used as a shovel, clamshell, scraper or bulldozer, adding to the versatility of the Payloader line of rubber-tired front end loaders.

Circle 261 on Reader Service Card



Moves Loads by Oscillation

Coilmount, Link Belt Company's new oscillating conveyor, will accomodate intermediate bulk loads of almost all types, regardless of moisture content, temperature, etc. Coilmount units are available from stock in pre-assembled sections. They operate by "natural frequency," and coil springs isolate most vibrations.

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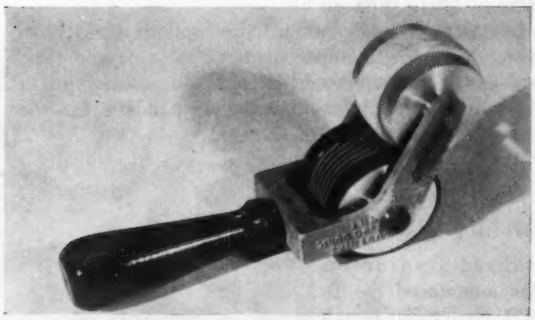

Marks Curved or Flat Surfaces

The Handy Marker, manufactured by Industrial Marking Equipment Co., rolls the impression on instead of stamping it, thereby being suitable for curved as well as flat surfaces. A hollow roller gives self-inking at constant tension. The unit employs interchangeable logos, plates or type for various applications.

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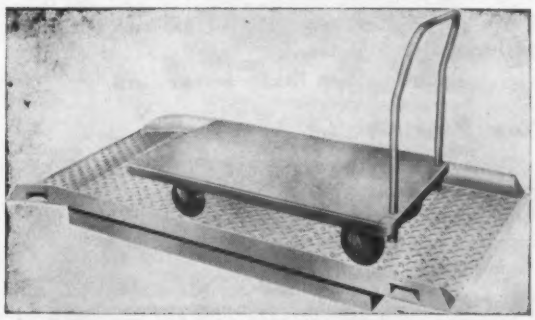

Aluminum Construction Is Featured

Met-L-Ite lightweight aluminum hand trucks and dock boards are now available from Voltz Brothers, Inc. The hand trucks, in capacities up to 2000 pounds, have formed aluminum decks with rounded corners, and adjustable wheelbase. The dock boards have safety tread plate, and have capacities up to 4000 pounds.

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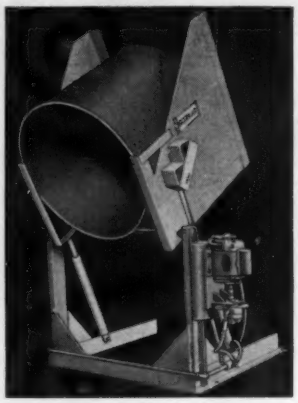
NEW EQUIPMENT SECTION

Elevates Variety of Containers



Drums, vats, boxes, box trucks and specially shaped containers can all be elevated and dumped by the new Tubar twin cylinder hydraulic dumper. Manufactured by the Tubar Dumper Division of Uhrden, Inc., the new unit will elevate loads up to 2000 pounds at heights up to 60 inches. It is highly portable, and is driven by an electric motor. The twin-cylinder unit employs a 12-volt battery or conventional power line as a source of electricity. Splash-proof and explosion-proof power features are available on order.

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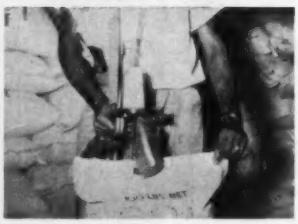
Bag Closing for Limited Operations



A portable electric bag closer, designated as Class 2100, has just been released by Union Special Machine Co., for limited or intermittent operations which do not require the use of high volume production equipment. The machine can be operated anywhere with no installation. It weighs only 10½ pounds, has top feed, and has an internal direct-drive motor. Types 401 and 101 stitches can be made in bags made of cotton, burlap, jute, multiwall and laminated paper. A safety protected mechanical thread cutting device is included.

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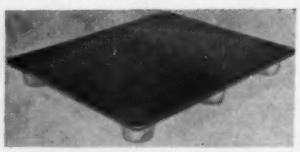
New Plastic Pallet



Reinforced plastic pallets and material handling trays are now manufactured by Reynolds Plastic Company, Inc. The pallets are 40 x 48 inches, and are available with five, six, seven or nine legs, placed so as to allow four-way fork entry. The trays are 37½ x 46½ inches, and do not have legs. The plastic is said to have high tensile strength and to be unaffected by water, chemicals, extreme temperatures and atmospheric conditions. It is lightweight, and there are no protrusions of any kind. In addition, the material is non-sparking and self-extinguishing.

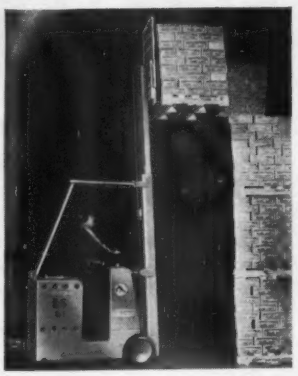
Circle 267 on Reader Service Card

Accurate Counts for Large Items

The Model C Universal Counting Machine manufactured by Delta Engineering Corp. is designed to handle large and bulky objects as well as conventionally shaped ones. Used in combination with filling and wrapping machines, the Model C sorts, counts and divides the objects into pre-set quantities and dispenses them as a batch. The actual counting is done by a photoelectric detection head at the end of the conveyor belt. The use of a transistor instead of a photo tube reduces the size of the light beam, increasing the accuracy of the machine. Counting rates vary according to the nature of the items, but rates up to 6000 pieces per minute may be obtained, with a range of 1 to 10,000 items per batch.

Circle 268 on Reader Service Card

Operates in Sub-Freezing Areas



An electrically-powered fork truck with special optional features for operation in sub-freezing areas has been developed by Lewis-Shepard Products, Inc. The Model E truck has corrosion-resistant construction that includes a brake enclosure, chrome-plated brake cams, special lubricants and hydraulic fluid, sealed bearings and undercoating. Other options are a heated control panel, bumper strips on the side and rear, and a stainless steel steering chain. In addition, extra thick forks, spotlights and canvas padding for the battery compartment are offered.

Circle 269 on Reader Service Card

Divides Hydraulic Flow Equally

Brand Hydraulics has announced the B-100 Hydraulic Equalizer that divides fluid flow equally between two cylinders which may have different loads. The unit features a heavy, dense, homogenous cast iron body with a hardened and ground spool. It will withstand pressures up to 2500 psi. Spool and body are

NEW IDEAS

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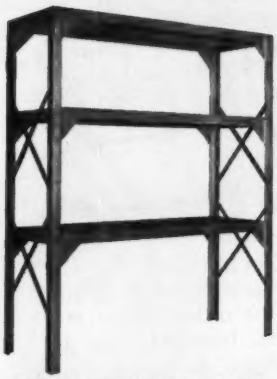


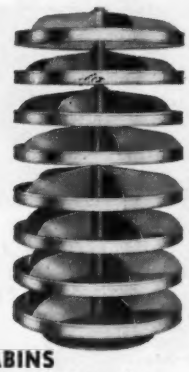
BULK STORAGE RACK
Long-span (6') shelving handles lengthy packages or bulk loads. No. BSR-247

PALLET FRAME
Permits fast pallet stacking of irregular or crushable loads. No. PF-44

WAREHOUSE RACK
For storage of heaviest palletized loads—up to 4000 lbs. per shelf! No. WR-9

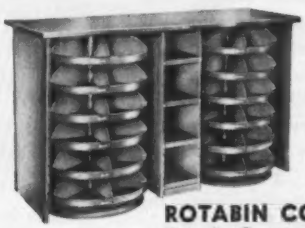
Time- and space-saving equipment of advance design . . . permits new economy, efficiency and handling ease . . . for every storage operation.

CONDUIT RACK
Permits vertical storage of conduit and tubing in lengths up to 10'. No. ECR

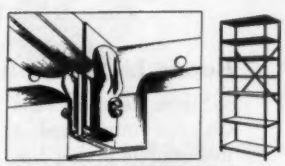


ROTABINS
For broken package lots large quantities of small items.

SERVICE CART
For moving small items quickly, safely in plant operation. No. SC-30



ROTABIN COUNTER
Permits finger-tip accessibility of many fast-moving small items. No. C-286-27-S



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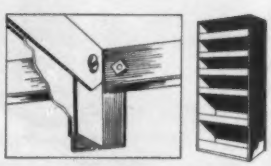

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City_____ Zone____ State_____

Circle No. 58 on Reader Service Card for more information

mated by selective honing to assure accurate dividing. The valve automatically locks when cylinder travel stops, thus preventing any transfer of oil from the heavy side to the lighter side. It will not slow down gravity return operations. The tee is available with ports of various sizes, and modifications for special applications are available on order.

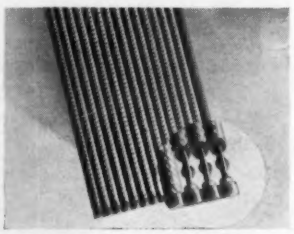
Circle 270 on Reader Service Card

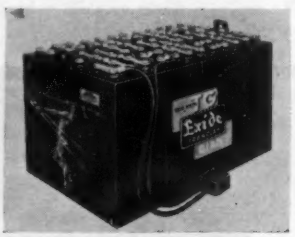
Protects Floors Under Heavy Loads

Molded plastic wheels in many new sizes and capacities are offered by The Hamilton Caster & Mfg. Co. Called Plastex, this material resists corrosion from acids, oils and greases. The wheels are floor protective under heavy loads, comparatively noiseless and shock absorbent, and practical in temperatures from —40° to 210° F. They are made of macerated heavy weave canvas duck, impregnated with phenolic resin compounds and molded under extreme heat and pressure. Sizes range from 3¼ to 12 inches in diameter, with load capacities from 300 to 3000 pounds.

Circle 271 on Reader Service Card

New Power for Truck Batteries

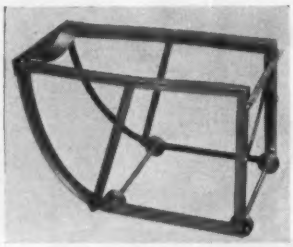




A new development in battery design has enabled the Exide Industrial Division of The Electric Storage Battery Company to design a battery that offers 72 ampere-hours per positive plate for industrial truck users. Designated the TG Exide-Ironclad Giant, the new battery is available in finished steel in eleven sizes, with from 11 to 33 plates, and capacities ranging from 360 to 1,152 ampere-hours at the 6-hour discharge rate. Key to its capacity breakthrough is the incorporation of armored porous tubing into Exide's tubular-type Ironclad plate design. This tubing is highly permeable to the diffusion of electrolyte and the passage of current. It is said to act like a highly efficient cigaret filter, facilitating the electrochemical action, and making the battery particularly effective at high discharge rates. Also employed in the new battery are positive plates of Exide's special Silvium grid splines, and heavy negative plates specially designed for maximum capacity and long life.

Circle 272 on Reader Service Card

Barrel Will Not Tip



Specially designed curved top rails hold barrels firmly in position on a new Barrel Cradle Truck just introduced by Morse Manufacturing Co. These curved rails provide additional security, preventing dangerous tipping of the barrel. Two other safety features of the truck are non-skid devices located directly under the forward wheels on the rocker, and a safety catch on the nose piece. These features are designed to prevent the barrel from sliding during loading.

Circle 273 on Reader Service Card

Offers LP-Gas Brackets

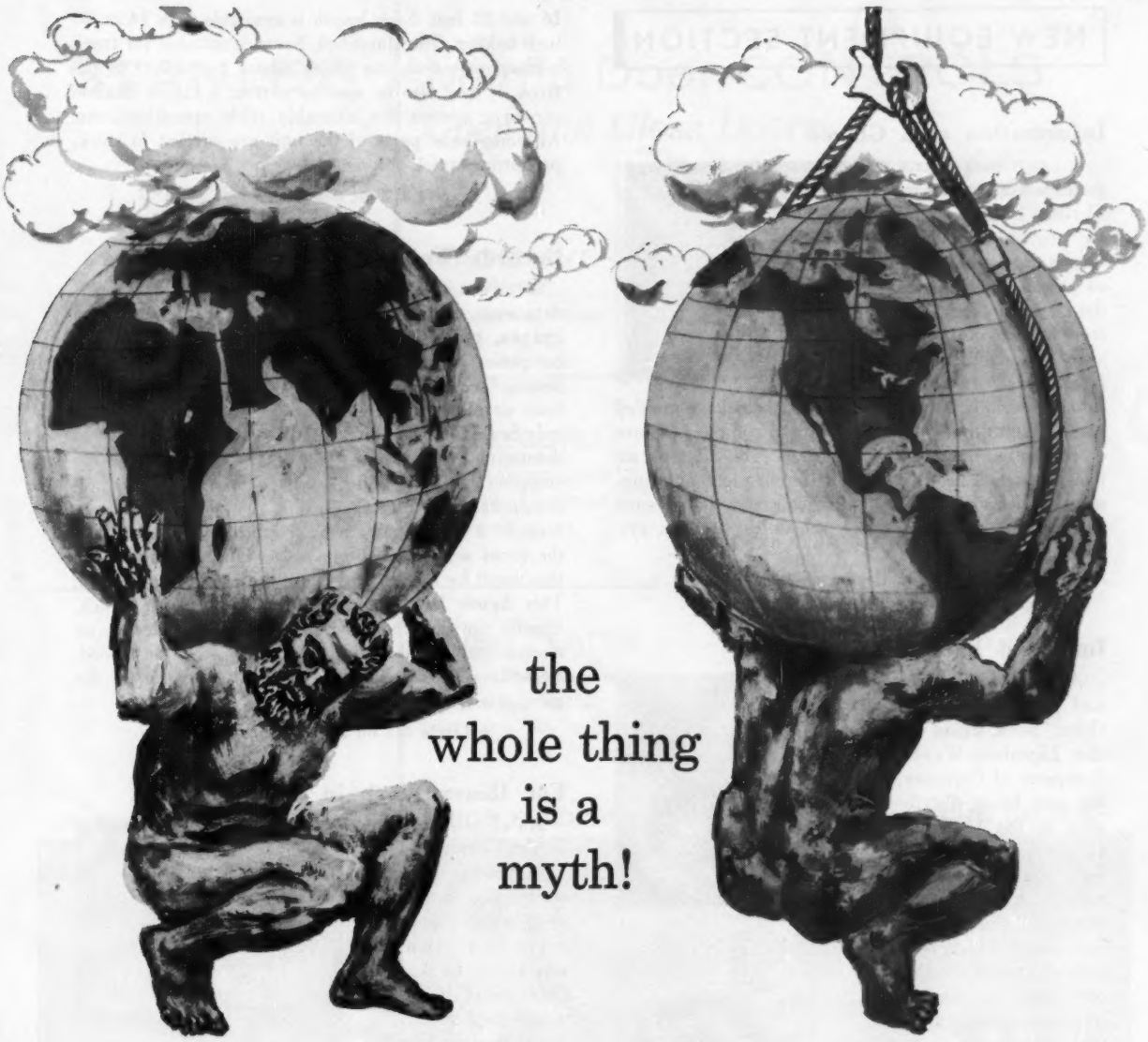
Single and double strap ICC cylinder brackets are now manufactured by Beam Products Mfg. Co. Equipped with a positive locking pin to hold the tank in place, these brackets come with a quick snapping locking device that permits rapid changing of cylinders. They are well padded for tank protection, and may be shipped to customers from both Los Angeles and Detroit.

Circle 274 on Reader Service Card

Boom Is Hydraulically Powered

Silent Hoist & Crane Co. has introduced a new mobile crane, featuring all-hydraulic boom adjustments. The All-Hydraulic Krane Kar is available in capacities from 1000 to 25000 pounds. It has fluid drive and power steering. All boom movements, including swinging, topping, telescoping and load hoisting, are hydraulically operated. By a mere touch of a valve, the operator may quickly and smoothly shorten or lengthen the boom, swing right or left, top the boom and hoist the load. These operations may be performed simultaneously or independently, in the same or opposite directions.

Circle 275 on Reader Service Card



the whole thing is a myth!

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Certain facts apply to all Roebling slings, whatever their use: advanced construction features certify safe, steady service and stability under load.

The new catalog that we'd like to send you is designed to make sling selection and ordering as easy as the job a Roebling Sling performs. Ask for A-931. Meanwhile, if you have any materials handling questions or want further sling information, your Roebling salesman or distributor will hasten to help you out. Write to Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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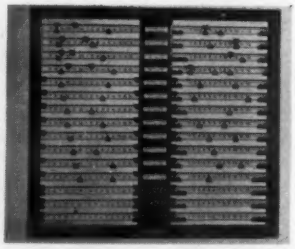
Circle No. 127 on Reader Service Card for more information

NEW EQUIPMENT SECTION

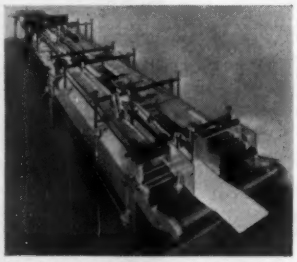
Information at a Glance

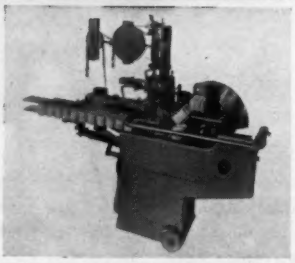


A new visual control panel manufactured by Christie Sales Company provides a handy means of keeping track of truck maintenance data. Called the Contro-All, the unit consists of a solid walnut frame with doweled joints. Specially extruded aluminum bars have molded plastic sliding indicators, providing a complete picture of the entire operation at all times. The 30 separate bars may each be used for a different piece of equipment, and may be set up to indicate at a glance such information as maintenance schedules, storage systems, etc.

Circle 276 on Reader Service Card

Imported Packaging Machines

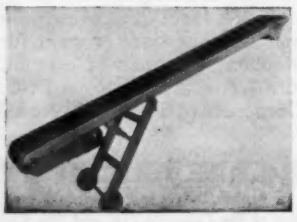




A folding box gluer and a bundling machine, both made by the Jagenberg-Werke Company of Germany, are now being distributed in the U. S. by Potdevin International, Ltd. The gluer is a newly designed unit for small and medium box runs, with precision and quick changeover for a wide range of sizes at speeds up to 200 feet per minute. The adjustments range is from $1\frac{5}{16}$ to $12\frac{13}{16}$ inches folded flat, and from 4 to $15\frac{3}{4}$ in length. The bundling machine is capable of handling a wide range of sizes simply by changing dial settings. Size ranges of bundles are: length $2\frac{3}{4}$ to 11 inches, width $1\frac{3}{8}$ to $6\frac{3}{4}$ inches, height 2 to $3\frac{1}{2}$ inches.

Circle 277 on Reader Service Card

Steep Inclines No Obstacle



A new portable conveyor developed by Standard Conveyor Company is adaptable to unlimited inclines up to 26 degrees. Called the Handibelt Boom, the unit is available in lengths of 11, 16 and 21 feet. Each length is available with 14 or 20 inch belting. The Handibelt Boom is suitable for truck loading or warehouse piling where portability is desired. It may also be used as part of a highly flexible conveyor system, for assembly table operations, etc. All component parts of the unit are carried in stock, permitting quick shipments.

Circle 312 on Reader Service Card

Records Weights at Remote Locations

A new type weigh data system that originates, transmits and computes weights for remote recording has been developed by Toledo Scale Co. The unit determines the gross shipping weight, and transmits it in digital form to a card punch. It then subtracts the tare from the gross weight to obtain net weight, and multiplies this result by a factor to secure the final billing figure. This figure is also transmitted to the card punch. Finally the factored weight is also transmitted to an electric listing and adding unit as a production record. Recording units can be at any location desired by the user.

Circle 313 on Reader Service Card

For Heavy Work in Close Quarters

An all-new pneumatic tired lift truck that is said to have the compactness to work inside single-door box-cars, yet with traction and capacity to handle 7000 pound loads over rough yard terrain, has been developed by Hyster Company. The Hyster 70 is designed to meet the needs of the retail lumber industry, which requires a heavy-duty maneuverable unit which can operate within confined storage areas. The unit has a turning radius of 100 inches, and a length of $106\frac{3}{8}$ inches. A number of special attachments are available to increase its versatility.

Circle 314 on Reader Service Card

Deluxe Passenger Service

Passengers are transported through spread-out plant areas comfortably and conveniently with a new personnel trailer developed by Mercury Manufacturing Co. For use with trackless trains towed by gasoline or electric tractors, the Type A-335-6M trailer is standard with seating for six passengers, and can

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(photoelectric)
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PULL CORD
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Wall- or floor-mounted push or kick plates.

Doors Remain Open Only the Minimum Time Required to Let Traffic Through!

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- REDUCE END BREAKAGE
- SPEED TRAFFIC FLOW
- SAVE TIME
- CUT DOOR DAMAGE and MAINTENANCE COSTS
- IMPROVE WORKING CONDITIONS

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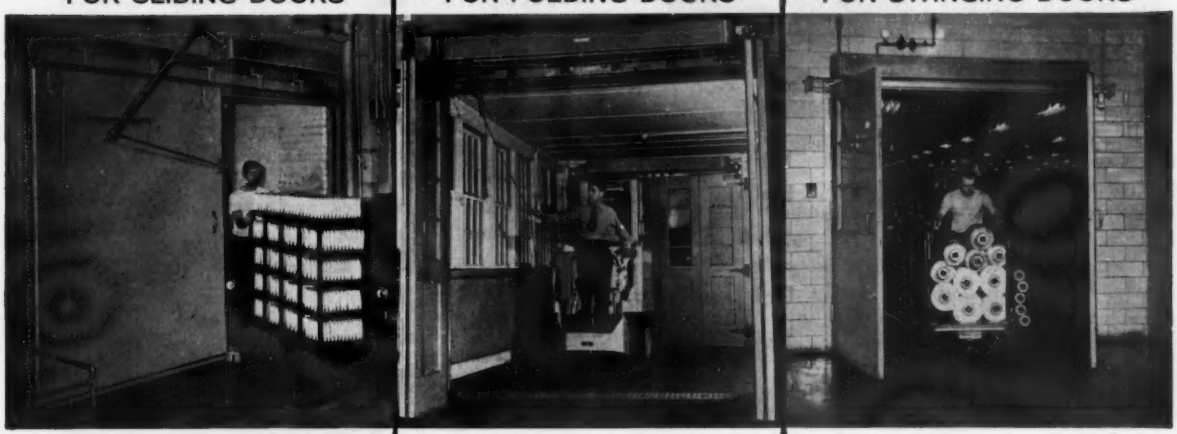

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Circle No. 139 on Reader Service Card for more information

be modified to provide seating for nine. Standard bus-type seating and shock absorbing casters are employed. The platform of the trailer is 40 inches wide, 102 inches long and 15 inches high. It is provided with a socket-type hitch.

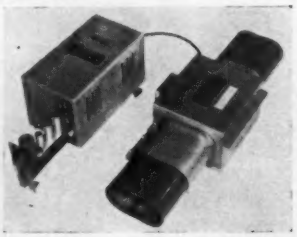
Circle 278 on Reader Service Card

Serves as Walkie or Rider Type

A new stand-up model low-lift platform truck manufactured by Barrett-Cravens Co. gains added versatility through design features which permit it to be used as a walkie type truck when needed. The stand-up Power Ox has a 6-inch lift, and is available with 4000 and 6000 pound capacities and a wide range of platform lengths. It is battery-powered, and is also available as a low-lift fork truck.

Circle 279 on Reader Service Card

Pneumatic Tube Dispatching



An automatic dispatching system, called Magnepulse Dispatcher, is now available for pneumatic tube systems or transmission of parts, materials or carriers by high speed conveying means. The dispatcher enables installation of an economical loop-type system rather than the conventional multi-tube system. It will control carriers traveling up to 30 mph. Developed by Gemco Electric Co., it employs magnetic techniques for coding the destination of each carrier. One selector positions the station magnet for any of 10 stations; another selector positions the loop magnet for the loops.

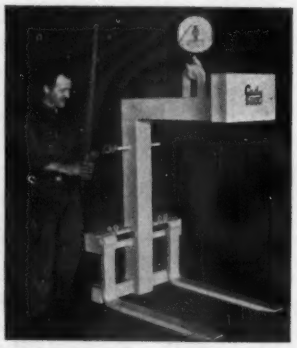
Circle 280 on Reader Service Card

For Ground Level Handling

The Multiton Junior has been developed by the Stokvis-Edera & Co., Inc. as a supplement to the larger Multiton Roller Skid. It is designed for handling loads of from 1000 to 6000 pounds at ground level. The Multiton Junior is only 2⅝ inches high, and is of all steel construction. It moves on three 2¼ inch rollers, each equipped with precision neoprene-sealed ball bearings. It is 12 inches long by 4¾ inches wide, and weighs only 12½ pounds. Models are available for straight or swivel type operation.

Circle 281 on Reader Service Card

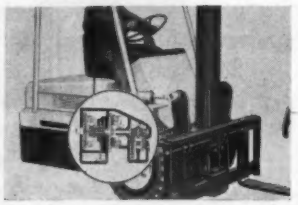
Pallet Lifters Have Adjustable Forks



Addition of a new line of pallet lifters with adjustable forks has been announced by Cady Metal Fabricating Co. The adjustable forks add to the versatility of the lifters by allowing varying pallet widths to be handled. No tools are required —a locking pin holds the forks in position at small increments. The units hang level when empty or loaded. Models are available with capacities of 2 and 3 tons.

Circle 282 on Reader Service Card

Torque Converter is Optional



The new Hystamatic Drive is now being made by Hyster Company, and is available as optional equipment on the all-new 3000, 4000 and 5000 pound capacity lift trucks. These trucks, designated models 30, 40 and 50 respectively, are pneumatic tire models. In addition, the new transmission is also available on the "Space Saver" lift trucks in the same capacities on cushion tires. The Hyster-built torque converter provides positive "inching" control, which allows combined "inching" and raising of load at full lifting speed. Low-high gear shifting is eliminated, and a synchronizer speeds forward-reverse shifting.

Circle 283 on Reader Service Card

Automation in Road Construction

Triangle Engineering Co. has developed an advance design aggregate handling system, T.E.C. 5000, named by the company as The Mighty Mole. The system is made up of a tunnel section, inclined conveyor belt, turn-head chute and electrically operated control panel. It is adaptable to road construction, operation of material yards, or any material batching function. The tunnel consists of individual 20 foot sections, each with a loading gate that permits materials to be placed on the conveyor belt and brought to the chute heads in controlled sequence. The entire operation of tunnel,

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Circle No. 39 on Reader Service Card for more information

inclined conveyor and turn-head chute is directed from the master electrical panel in the control tower. The system is flexible and may be set up for many different types of operations.

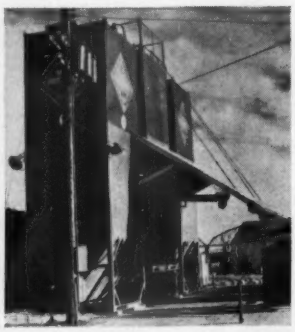
Circle 284 on Reader Service Card

Designed for Super Loads

The Faultless Caster Corporation has announced the HX300 Series Super-Load Caster, designed to give maximum support for loads up to 10,000 pounds per caster. Timkin tapered roller bearings and self-contained ball races provide maximum swivel and rolling movement. The wheel is of reinforced semi-steel, with close-fitting dust caps protecting the bearings on both sides from dirt and chemicals and at the same time retaining the lubricant. Lubrication is fast and easy, through the same sized pressure grease fittings for all bearings.

Circle 285 on Reader Service Card

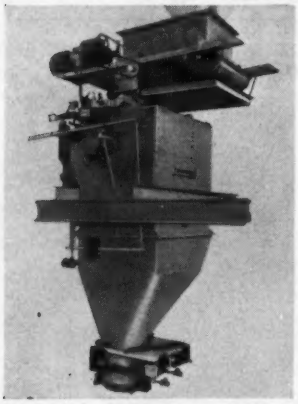
Speeds Rail Car Unloading



A 36-foot tall portable bulk plant is said by its manufacturer, Delta Tank Manufacturing Co., Inc., to be capable of unloading a full railroad hopper car of pulverized material in less than two hours. The combined unloading-storage loading plant can be moved from one site to another simply by fastening detachable wheels and an axle to one end, and towing it behind a regular truck tractor. The unit consists of a 31½ foot tall and 10 foot square main chamber weighing about 20,000 pounds. The chamber is divided into two compartments, an upper "live storage" segment and a lower "dead storage" section. Bucket-type elevators run from a screw-type conveyor car unloader to a point five feet above the upper bin. Pulverized materials are emptied into the upper chamber by the elevators. When the upper chamber is filled, additional material overflows automatically into the lower chamber. As trucks are loaded from the upper section, the unit's elevator recharges this segment with material from the lower area. F-H airslides are used to empty each of the chambers, eliminating the need for mechanisms built into the storage sections.

Circle 286 on Reader Service Card

Accurate Weights at High Speeds



A new power-driven belt-fed bagging scale designed by Richardson Scale Co. will sack 25, 50 and 100 pound bags, at speeds up to 15 bags per minute, and within accuracy tolerances of plus or minus 3 ounces on most materials. Called model GA-38, the new scale is designed to handle all dry feeds, including grains, crumbles, pallets, cubes and molasses feed. Special dust-proof construction makes it particularly suitable for handling dusty materials.

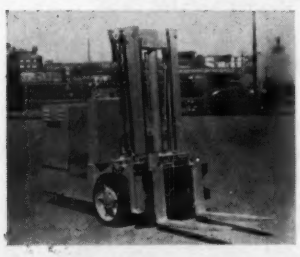
Circle 287 on Reader Service Card

Operates from Either End

An electrically powered filler yarn truck, for use in textile mills, has been developed by Lewis-Shepard Products, Inc. The truck is provided with operating handles located at either end, so that the operator can navigate narrow aisles with maximum efficiency. Constructed of an all-welded steel frame, it can service 150 textile looms weaving multi-colored cloth, and it is also adaptable to general industrial use. It is capable of turning in its own radius. Controls are the same as those used on standard Lewis-Shepard walkie trucks, except that there is no provision for raising or lowering.

Circle 288 on Reader Service Card

Features Short Turning Radius

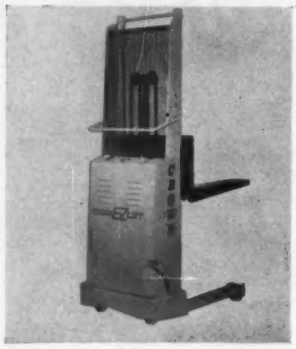


The Model A-1484 "Yak" stand-up fork truck, recently announced by Mercury Manufacturing Co., features short turning radius, high fork elevation, fast operating speed and maximum operator flexibility. The truck has a 4000 pound capacity with loads up to 48 inches long. Maximum fork elevation is 61 inches non-telescopic, and 130 inches telescopic. It can stack at right angles in an aisle equal in width to 102 inches plus load length. Power is provided by 18 cells of 19-plate lead-acid battery, 30 cells of MC-8 nickel-alkaline battery, or HA-36 Ready Power unit.

Circle 289 on Reader Service Card

NEW EQUIPMENT SECTION

Designed for Cramped Areas



Electrically operated hydraulic lifts with capacities up to 1250 pounds are now available from Crown Controls Co., Inc. These E-Z Lift trucks are compact and maneuverable. They can turn in extremely short radius, making them useful in narrow aisles or cramped areas. Powered by a 12-volt battery system, they have built-in chargers that operate from 110 volts. They also have automatic protection against overload, roller bearing equipped wheels, and positive-action foot brakes. As an optional feature, they may be equipped with remote controls.

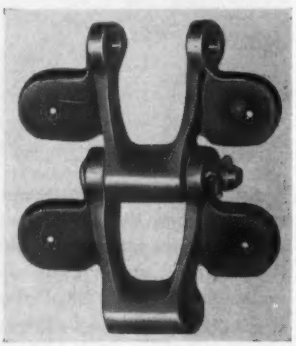
Circle 290 on Reader Service Card

All-Plastic Industrial Wheel

An entirely new reinforced all-plastic industrial wheel has been introduced by The Fairbanks Company. The Lamilon nylon-reinforced Wheel has high impact strength and abrasion resistance. It will retain a smooth tread and perfect concentricity, thereby protecting floors against marking or marring. Lamilon has water absorption characteristics comparable to high quality rubber. It is resistant to oils, greases and chemicals, and high temperatures.

Circle 291 on Reader Service Card

Winged Links Give New Chain Uses



Steel conveyor chain, each link made with a wing attachment, is manufactured by Robert A. Main & Sons, Inc. This new pin-type chain, made of forged steel and heat-treated, is designed for maximum strength conditions. It can be furnished for acid or heat conditions, using corrosion-proof or heat resistant materials. The wing attach-

ments make it easy to attach conveyor slats, etc. The chain is easy to take apart and assemble, and can be used in single or multiple strands. Sprockets and complete conveyor aprons can be supplied using this chain.

Circle 292 on Reader Service Card

Flatbed Truck Has Hydraulic Drive

A new 1½ ton capacity material handling truck with hydraulic torque converter drive has been introduced by The Prime-Mover Co. The new truck has a top speed of 12 mph, with special gear ratios available for higher speeds. Smooth starts and acceleration eliminate spillage or shifting of loads. Two sizes of flatbeds, 42 x 42 inches and 42 x 60 inches, are available from stock, as well as an 18 cubic foot bulk handling bed. In addition, special beds can be furnished to customer specifications.

Circle 293 on Reader Service Card

Designed for Special Purpose Counting

The CMC Model 300 Series Totalizing Counters have been added to the line of electronic counting, timing and controlling instruments manufactured by Computer-Measurements Corp. These direct reading, high speed electronic counters are especially designed for industrial and special purpose counting. Any electrical, mechanical or optical event which can be converted into electrical impulses can be counted. Models are available from 1 to 4 decades, in a wide range of count capacities and count speeds.

Circle 294 on Reader Service Card

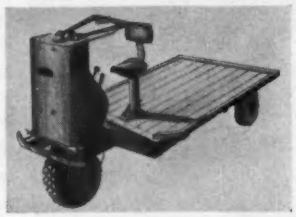
Features Remote Control Operation

A new portable electric lift truck has been introduced by the Lee Engineering Company. Called the Presto Hydraulic Lift, the unit has a lifting capacity of 1000 pounds, and features a remote control mechanism that makes it possible for the operator to raise or lower the platform while standing on it. The overall height of the truck is 80 inches, and the platform will raise 66 inches from the floor. Its 60 cycle AC

motor provides a lifting speed of 14 feet per minute. Other models are available with lifting heights up to 120 inches from floor.

Circle 295 on Reader Service Card

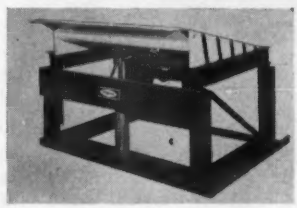
Handles "In-Between" Loads



The new Multiton-Excelsior gasoline truck offered by Stokvis-Edera & Co. is ideal for "in-between" jobs that are too heavy for hand trucks but too light for heavy equipment. The unit has a capacity of 1500 pounds, and a low bed for easy loading. Its pulling capacity of 3500 pounds enables it to haul heavily loaded trailers. The truck is powered by a Briggs & Stratton 4-cycle engine that consumes only one pint of fuel per hour. It has three speeds forward and reverse, three-wheel brakes, and pneumatic tires.

Circle 296 on Reader Service Card

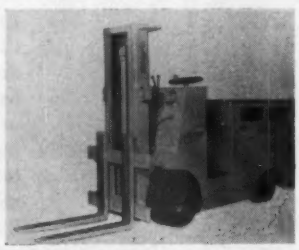
Dock Ramp for Changing Needs



The new Port-O-Dock, manufacturing by Wayne Pump Company, combines in one unit an adjustable steel dock ramp and a self-contained power activating mechanism. The platform is available in capacities of 10,000 and 20,000 pounds, and in varying sizes. The unit requires no installation or special wiring other than a standard 110 volt outlet. No pit construction, permanent connections or alterations of loading platforms are required. Thus the unit may be moved from location to location to suit changing requirements. The power cylinder is a single-action piston-type hydraulic assembly. The frame is adjustable for various dock heights from 42 to 60 inches.

Circle 297 on Reader Service Card

Stand-Up Electric Truck



Maximum ease of mounting and dismounting, especially valuable where the operator must leave the truck frequently during his daily procedure, is a feature of the new 6000 pound capacity fork truck just introduced by Elwell-Parker Electric Company. The stand-up model truck is designed with an unob-

structed operator's compartment which permits mounting from either side. It has a top speed of 5 mph when fully loaded, and a lifting speed of 20 fpm, also with a full load.

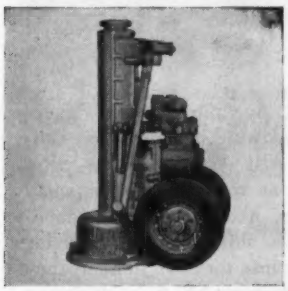
Circle 298 on Reader Service Card

Lifts by Vacuum

Sheet metal, glass, plaster-board, plywood and other hard-to-handle materials can be lifted by a new vacuum lifting device known as the International Air-Lift. Manufactured by the Material Handling Division of the International Staple and Machine Co., the Air-Lift is a portable hand unit capable of lifting up to 200 pounds. For heavier operations, International also offers a complete line of pads utilizing the same lifting principle and available in capacities of 200, 600, 1000 and 1500 pounds.

Circle 299 on Reader Service Card

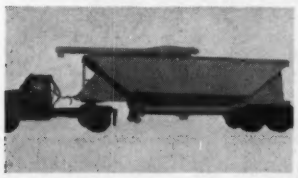
Jacks Are Air Operated



Two new jacks, the model 1720-R with 20 ton capacity and the 1735-R with 35 ton capacity, have been added by the Joyce-Cridland Company to its line of air motor equipment. Functional design and rugged construction provides the jacks with the stability and strength for extensive use on construction jobs and a variety of industrial applications. Lightweight and easily portable on large semi-pneumatic tires, the jacks feature the exclusive Toe Lift, which is designed to increase working efficiency when lifting loads too low to be handled by the lifting cap on top of the jack piston.

Circle 300 on Reader Service Card

Allows Bigger Payloads

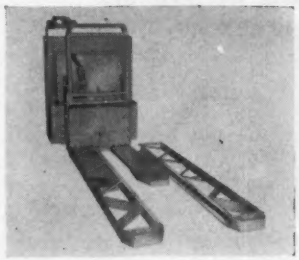


For handlers of bulk cement, feed, flour, grain or any other non-abrasive, free-flowing material, the new Baughman Hopper-type Auger Unloader Body offers self-supporting design (no need for trailer frame) for increased payloads, according to the manufacturer, Baughman Mfg. Co. The unloader is available in body lengths up to 34 feet. A divided auger on the bottom carries the material to the vertical discharge auger. Discharge is possible up to 19 feet above ground. Positioning of the auger is controlled from the cab.

Circle 301 on Reader Service Card

NEW EQUIPMENT SECTION

Extends Fork Truck Usefulness



Special fork extensions for use with its line of low-lift, pallet type, electric trucks are now available from Lewis-Shepard Products, Inc. The attachments easily slip on to the standard forks, doubling their length. With the extensions, pallet trucks are now able to handle long, light, bulky loads on either skid platforms or open face pallets. The fork extension attachments are of all-steel construction, and reinforced throughout for added life. They are available in a wide range of sizes, and are adaptable to any pallet-type truck.

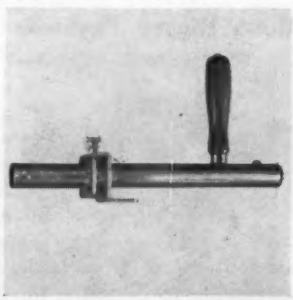
Circle 302 on Reader Service Card

Bakelite SR-4 Gages Are Self-Compensated

A new line of flat grid, fine pitch bakelite gages has been introduced by Baldwin-Lima-Hamilton Corporation. Designated the ABF type, the new SR-4 strain gages are produced as replacements for small sizes of wrap-around gages. According to the manufacturer, they have less zero shift and hysteresis for a given range of strain. Because they are thinner, they provide more precise measurement of strain on curves and fillets. For use on titanium and quartz, they are said to temperature compensate each other better than wrap-around gages, and offer considerably less creep at elevated temperatures.

Circle 303 on Reader Service Card

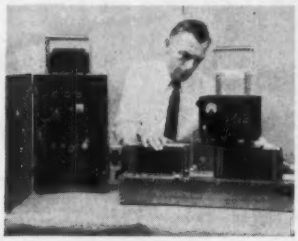
Handy Tool for Re-Using Cartons



Re-use of odd size cartons is made possible by a new tool for the shipping department, manufactured by Markay Products. The tool scores box walls to a desired depth, so the sides can be folded to proper size in one operation. This reduces the need for stuffing materials to fill over-size cartons. Called the Carton Sizer, the tool has an adjustable depth gauge with set screw to control the depth of scoring. It is made of polished aluminum with a needle-sharp lifetime scoring wheel.

Circle 304 on Reader Service Card

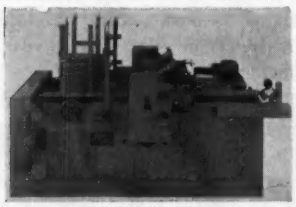
Electronic Policeman for Packaging Line



Contents of packages can be checked for proper quantity by an electronic Package Inspector manufactured by Photobell Sales Corporation. Any uniform line of packages containing materials that can affect the flow of high frequency current can be measured for quantity, moisture content, or non-uniformity of almost any nature. The packages can be completely sealed, and containers of virtually any materials can be inspected, except metal containers which are closed on all sides.

Circle 305 on Reader Service Card

Marker Has Hopper Feed



Algene Marking Equipment Co. has perfected a new marking machine that employs a hopper feed attachment for corrugated boxes. The unit is effective in marking up to 3000 cartons per hour, depending on their size. It can be made to mark only one panel, or every panel, flap and side of a flat box. Each machine is made to suit the individual purchaser's printing requirements.

Circle 306 on Reader Service Card

Boosts Tractor Versatility

A swinging drawbar is now available as optional equipment on Caterpillar Tractor Co.'s No. 933 Traxcavator. The new 5-position drawbar can be used to tow various types of trailing equipment, giving the No. 933 increased versatility. Center of the drawbar clevis is 14¾ inches off the ground, and the drawbar has a swing arc of 16¾ inches.

Circle 307 on Reader Service Card

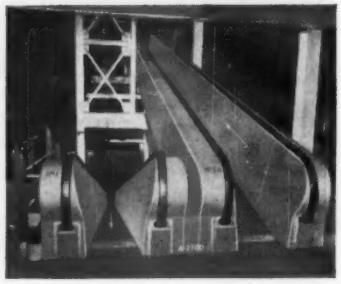
New Door Improvements

The Stic-Klip Manufacturing Co., Inc. has announced a new special mounting for Rubbair Door installations of 6 feet or wider. To strengthen critical stress points in wide installations, Stic-Klip now contructs them with 11 gauge steel offset mounts, with an extra ⅛ inch layer of rubber casing. In addition, the company will now provide a 135° cam mechanism as standard equipment on all doors requiring swings in excess of 90°.

Circle 308 on Reader Service Card

Passenger Conveyor

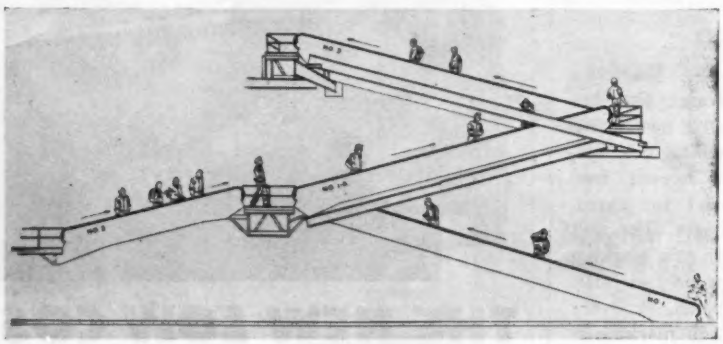
Facilitates Steel Mill Traffic



A PASSENGER conveyor carries workers between floors at Weirton Steel Co., a division of National Steel Corp. Called the Speedwalk, it has been called "a look into the future of industrial plant traffic management."

The Speedwalk is a system of four moving ramps. Each unit is a conveyor belt which moves upward at an incline of 14 degrees and at a speed of 132 feet per minute. This rate is about one half of normal walking speed. The angle is gentle enough to allow maximum comfort to riders.

In 12 minutes the installation is capable of elevating 734 men up three and one half stories, a total of 41 feet 9 inches in vertical travel. It has a capacity of 3,600 passengers per hour.



The Speedwalk has few moving parts, requires little maintenance, and is said to be economical in power use. It is powered by electric motors up to 15 hp. Motion is initiated by push button, although activation can also be accomplished by photoelectric cell.

The system saves Weirton employees a long climb by stairway from the mill floor to street level. It provides continuous transportation, and keeps traffic moving in a smooth, orderly fashion.

Courtesy Stephens-Adamson Mfg. Co.

Clark Awards Deadline is March 25; Prizes Total $2000

Theme Is "Outdoor Handling & Storage"

MARCH 25 is the deadline for entries in the 5th Annual Clark Awards competition, which this year is on the subject, "Outdoor Material Handling and Storage". All papers must be postmarked by midnight of that date, and should be addressed to: AMHS National Chairman, Honors & Awards Committee, M. E. Richardson, c/o Standard Conveyor Company, P. O. Box 848, Decatur, Georgia.

M. E. Richardson

All members of AMHS and students of material handling are eligible to participate. Five cash prizes will be awarded, totaling $2000. First prize is $1000, with subsequent awards of $500, $250, $150 and $100. All remaining entries will receive certificates.

Richardson, awards chairman, has pointed out that compliance with all the rules of the contest is essential. Briefly, these rules are as follows:

All papers must be typed or printed, double space on 8½ x 11 inch paper, with 1½ inch margins on the left. Photographs and illustrations must be suitable for reproduction. There is no restriction on the length of entries. In past years, however, the average paper has been 2000 to 3000 words long.

The contestant's name, address and AMHS Chapter affiliation must be on a separate sheet attached to the paper. The only identification on the main body of the paper should be the title. Ten copies must be submitted for judging; it is also suggested that an additional copy be sent to the local chapter Honors & Awards Committee Chairman.

Each paper will be judged according to the analysis of subject; value in its particular field; originality; organization and arrangement of material; and visual aids.

AMHS reserves all rights of publication and copyright for all entries it receives. Only papers which have not previously been published or submitted for publication are eligible.

Each contestant must waive all proprietary rights to any and all unpatented ideas, systems, machines and parts disclosed in his paper, and must agree that no confidential relationship exists between himself and AMHS or the prize donor, regarding any subject disclosed in the paper.

Each contestant is requested to identify by patent number, name of inventor and date of issuance of patent, each patented invention referred to in his paper.

The association has outlined the following prerequisites of a good paper, as a guide to persons who wish to submit entries: It should deal with a subject of interest to a large number of readers. It should state the problem clearly, and should offer a discussion or solution to that problem, along with evidence supporting the solution. The language should be understandable to the engineer who is not a specialist in that field, but may be interested in it.

Further details may be obtained from local AMHS Chapters.

AMHS Reveals Wunsch Award Theme for '57

J. W. Wunsch

ANY one of three themes may be selected as the subject for technical papers entered in the 1957 Silent Hoist & Crane Co. Material Handling Award. The American Material Handling Society, administrator of the contest, has announced that any of the following subjects may be used.

"A Technical Evaluation of Mobile Equipment"

"Mobile Equipment Can Solve Your Material Handling Problem"

"A Study of the Multi-Purpose Machine for Material Handling"

This technical paper competition, sponsored by the Wunsch Foundation, offers a prize of $350 for the winning paper. Second and third prizes of $150 and $100, respectively, are also offered.

Contest papers of AMHS members will be honored in the competition, as well as papers of students. M. E. Richardson, national chairman of the AMHS Honors & Awards Committee, emphasizes that students of all classifications are urged to submit papers.

To further clarify the three themes, Mobile Equipment has been defined as any wheeled vehicle used for handling materials, such as trucks, cranes, or any other vehicle not requiring a fixed path for movement. Multi-Purpose Machines include any machines such as fork trucks with attachments, or any other machine which can accomplish two or more functions normally considered to require two or more pieces of material handling equipment.

Actual case histories, design projects, methods and costs analyses and research are encouraged, as well as any other phases of material handling related to the three major topics. July 1 is the closing date for the contest.

Switch to Diesel Cuts Yard Costs

REPLACING a 70-ton six-wheel steam locomotive with a new 35-ton diesel hydraulic locomotive has resulted in remarkable savings in fuel costs at the Philadelphia Slag Company's Philadelphia, Pa. plant.

The new diesel, put into operation in February, 1954, has performed the same haulage job formerly accomplished by the steam unit, with a reduction of more than $1000 per month in fuel costs since it began to work for the company 2½ years ago.

According to the superintendent of the slag plant, both locomotives were used to haul battleship cars of slag from bank to plant, on a daily schedule. The steamer required up to 25 tons of coal weekly, while the diesel locomotive does the same job with an average weekly consumption of only 75 gallons of oil.

Simple arithmetic shows that the average savings effected by the use of the diesel have already equalled the cost of the new locomotive. Needless to say, the firm is well satisfied with the locomotive's performance.

Courtesy Fate-Root-Heath Co.

CLASSIFIED ADVERTISING SECTION

USED EQUIPMENT—MEN—JOBS—LINES

Rates: for "Positions Wanted" $8.00 minimum, limit 25 words. For all other classifications $10.00 minimum for 25 words; each additional word 25c. Boldface type or all caps, $12.00 minimum for 25 words, each additional word 35c. Box address counts as five words. All insertions payable in advance.

HELP WANTED

Engineer experienced in overhead conveyors wanted as Field Sales Manager in established Ohio-Michigan territory for national manufacturer. Large potential. Unlimited earnings. Full details first letter required. All correspondence confidential. Write c/o FLOW, Box 3557.

REPRESENTATIVES WANTED

AGENCY OPPORTUNITIES

Established and rapidly growing manufacturer of industrial trucks, other material handling equipment, has openings for young men wanting their own sales agencies. Program includes short term factory training providing product knowledge, principles of agency management, and field training. At completion of training free to choose location from openings available. Financial assistance provided if necessary. Write c/o FLOW, Box 3657 giving details of background and availability. All replies confidential.

EXCEPTIONAL

Manufacturers' Agent covering Mass. —R. I., seeks exceptional materials handling equipment, quality products at competitive prices, to promote and sell. Prefer the unusual. Write FLOW Box 3357.

To handle line of engineered conveyors. Established manufacturer introducing line of unusual conveyors. Leads furnished. Exclusive territory. Commission. Write today. FLOW Box 3257.

ESTABLISHED REPRESENTATIVE WANTED

With machine sales background to sell a proven automatic packaging machine. Some knowledge of packaging desirable. Exclusive territory open New England, Pittsburgh area, Indiana and Kentucky, Chicago, St. Louis and Kansas City, Minneapolis and St. Paul. Give experience, exact territorial coverage and other lines represented. Write c/o FLOW, Box 3157.

MANUFACTURER NEEDS

AGENTS! DISTRIBUTORS! REPRESENTATIVES! to represent rapidly expanding line of ADD-A-TIER STEEL SHELVING; PARTS BINS, INDUSTRIAL 2-WHEEL HAND TRUCKS, PLATFORM AND BOX TRUCKS, DOLLIES AND SHOP EQUIPMENT. Most territories open. Write President, Bernard Franklin Corp., 2900 E. Hedley St., Philadelphia 37, Pa.

POSITION WANTED

Materials Handling, Transportation Specialist. Available about June. Mature. Fifteen years experience in organization and operation of integrated Materials Handling, Storage and Transportation systems. Excellent references. Write c/o FLOW Box 3457.

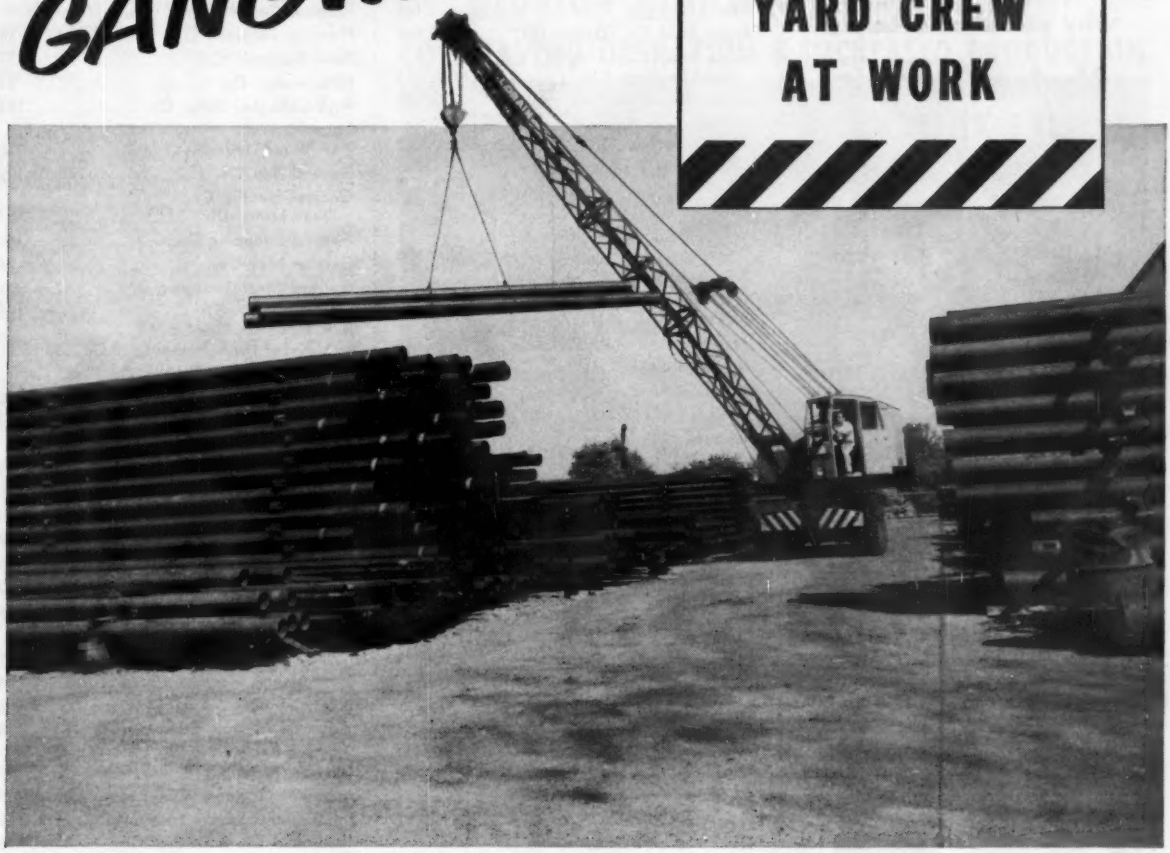
Job Hunting?

Here's a FLOW service to aid those who hesitate to answer "blind" advertisements in our Help Wanted column. Rather than jeopardize your present job by having your letter fall into the hands of your own employer or some other unwanted firm, just send FLOW a list of the "taboo" firms along with your letter. If the advertiser is on your list your letter will be returned to you.

Circle No. 91 on Reader Service Card for more information

GANGWAY—

YARD CREW AT WORK



The aisles are wide and clear, the pipe is stacked neat and high—at the yard of Neill Supply Company, Lyndhurst, New Jersey. Reason? A 17½-ton Lorain Self-Propelled Crane, Model SP-254W, is their one-man "yard-crew." It goes anywhere—anytime—because of its fast-moving, rubber-tire mobility. The Lorain reaches far and wide to stack higher, conserving valuable yard areas as materials go skyward.

If your plant is using obsolete, costly material-handling methods, it's time to investigate Lorain Cranes. For these fast, flexible machines can handle a "hundred-and-one" materials—from pipe to pig iron, from sand to steel. They are built in a variety of capacities to handle any type, shape or weight of materials. Built-in Lorain features, such as Independent Travel for simultaneous operation of hoist, swing and travel to produce extremely agile maneuverability . . . automotive-type power steering for quick, easy response . . . extreme precision control of boom raising or lowering are but a few pay-off features material handlers like and go for.

Eleven "Lorains-on-rubber" are at your command—ranging from the low-cost, 7-ton SP-107 to the giant 75-ton MC-875—to match your material handling needs (8 to 60-ton crawlers are also available). Your nearby Thew-Lorain Distributor is ready—now—to show you how to pay for a Lorain with the savings it will make for you.

THE THEW SHOVEL CO., LORAIN, OHIO

11 CRANE SIZES:

7 - 8 - 10 - 12 - 15 - 17½
22½ - 25 - 30 - 35 - 75
TONS CAPACITY

THEW LORAIN®

Circle No. 145 on Reader Service Card for more information

ADVERTISERS

INDEX

AMHS Chapter in Boston Sponsors 1st Expo-Clinic

THE first Expo-Clinic for New England businessmen will be conducted for three days in Boston, Mass., March 19 through 21. This combination material handling show and conference, to be held in Boston's Commonwealth Armory, is sponsored by the New England Chapter of the American Material Handling Society. It is designed to present the latest equipment and ideas to industry representatives in the New England area.

The Exposition will consist of about 60 exhibitors displaying a diversity of material handling equipment. It will be open to the public free of charge.

Clinic sessions will be held in the mornings. They will be open to members of the New England Chapter of AMHS, and to any other persons who register for them. Registration need not be made in advance.

Sessions will feature top industry speakers. Subjects for the opening day will include "Cost Cutting Know How", and "Forks Powered by What?" The second day's discussions will feature "Power Through Presentation", and "Pay as You Go with Material Handling Equipment". The closing day topics will be on "Do You Really Need A New Plant", and "Keep Your Equipment Running Profitably". An eye opener session will be held each morning from 9:00 to 9:30 for registration, coffee, donuts and informal discussions.

According to officials, summaries of all sessions will be sent to each clinic participant.

For advance registration or further information, write to: Expo-Clinic Directors, 100 Ashford Street, Boston 34, Mass.

CLINIC SESSIONS

Tuesday MARCH 19

9:00 - 9:30 AM—Eyeopener Session

9:30 - 11:00 AM—Cost Cutting Know How. Learn more about how to "Eliminate", "Simplify", "Combine", and "Mechanize" with profit.

11:15 - 12:45 PM—Forks Powered by What? Which industrial truck drive is best suited to your needs?

1:00 - 1:30 PM—Formal Opening of EXPO-CLINIC

Wednesday MARCH 20

9:00 - 9:30 AM—Eyeopener Session

9:30 - 11:00 AM—Power Through Presentation. How to present the advantages and disadvantages of alternative solutions so as to convince top management of profitable action.

11:15 - 12:45 PM—Pay as You Go with Material Handling Equipment. Can you profit by leasing equipment? Some can; some can't. If today's "tight" money market affects you, learn the advantages and disadvantages of leasing.

Thursday MARCH 21

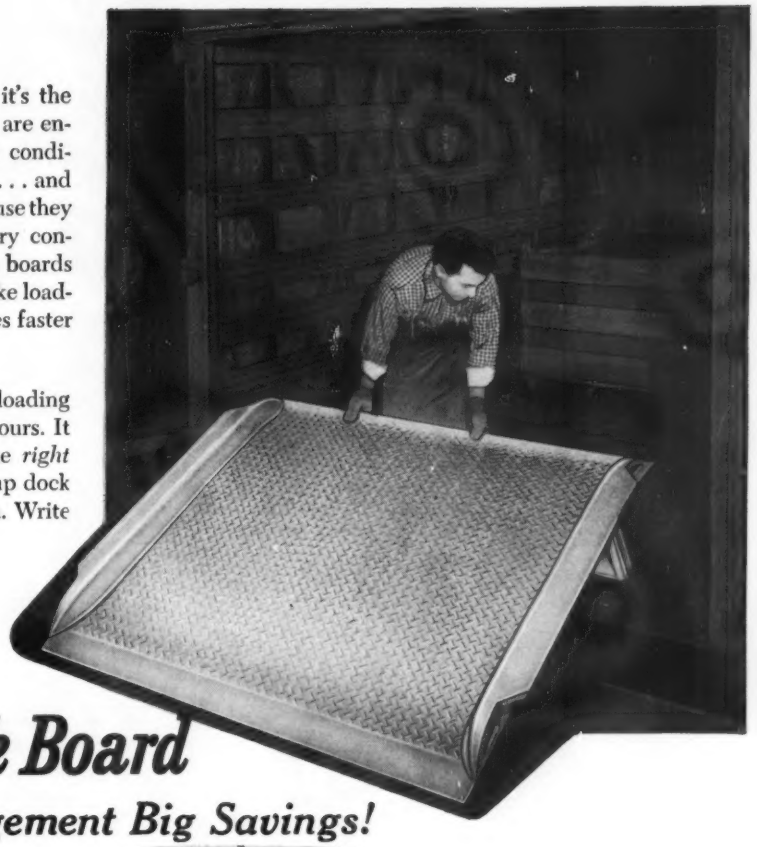
9:00 - 9:30 AM—Eyeopener Session

9:30 - 11:00 AM—Do you really Need a New Plant? How solutions may be found to the antiquated plant problem so common in New England.

11:15 - 12:45 PM—Keep Your Equipment Running Profitably. Learn how others are benefitting from minimum downtime, little maintenance cost, longer equipment life from programmed maintenance.

If it's a Magliner, you can be sure it's the *right* dock board because Magliners are engineered specifically for your dock conditions . . . your equipment and loads . . . and your operational requirements. Because they meet difficult and out-of-the-ordinary conditions, Magliner magnesium dock boards eliminate costly bottlenecks—and make loading costs go down. Dock traffic moves faster . . . smoother . . . safer!

Magliner Dock Boards *safely* speed loading operations and save valuable man hours. It will pay you to investigate how the *right* dock board (a Magliner) will step up dock handling efficiency in your operation. Write today for your copy of DB-204.



with a
Magliner Dock Board
you can show management Big Savings!

Safety factors in both design and construction fully meet your equipment and load requirements . . and provide positive insurance of safe, dependable, and economical long-life service.

Magliners are engineered to meet unusual and out-of-the-ordinary conditions. In this instance, the problem of cramped quarters and limited turning areas was solved with this wide, flared Magliner Dock Board. Most of the turn can be made on the board itself.

COMPARE THESE *Magliner* ADVANTAGES

1. TIRE-SAVER SAFETY CURBS—prevent truck run-offs and stop power truck tire damage. An exclusive Magliner feature.*

2. TRIPLE STRENGTH CURB ENDS—of special alloy, high strength magnesium . . . double tapered for wide angle turns. An exclusive Magliner feature.*

3. RUGGED AND PERMANENTLY ATTACHED UNDERSTRUCTURE fits snugly between dock and carrier to provide positive and automatic positioning—dock board cannot slip out of place!

4. CROWNED, so that the edges bear snugly against the dock and carrier to accommodate varying differences in height —for smooth, safe equipment crossover!

5. MAGNESIUM LIGHT—STRONG—SAFE! Made of the world's lightest structural metal . . . for easy one-man handling, maximum safety, and reliable service.

6. ADDED STRENGTH THROUGH STRESS RELIEVING—an extra safety advantage that can't be seen, but it's important.

7. BEVELED EDGES (maximum 10° slope) facilitate movement of valuable loads on and off the dock board—avoid hazardous load jar—eliminate equipment damage and load loss!

8. COMFORTABLE, ROOMY HAND GRIPS —sealed to exclude moisture. Optional full length hand rails for added safety and convenience.

9. SPECIALLY DESIGNED, FLUSH-TYPE LIFTING HOOKS to facilitate moving the dock board by power truck. (Offered as optional equipment.)

10. POSITIVE, ADJUSTABLE DROP LOCK —the *only* good solution for many ramp and dock board installations. Another exclusive Magliner feature.**

Write Today for Your Copy of Bulletin DB-204

*Pat. Pend. **Pat. No. 2659914

MAGNESIUM
DOCK BOARDS

MAGLINE INC. • P. O. BOX 23 • PINCONNING, MICHIGAN

Canadian Factory: Magline of Canada, Limited, Renfrew, Ontario

Circle No. 96 on Reader Service Card for more information

THE FLOW FAMILY...

reaching all the markets!

FLOW: The FIRST magazine in Material Handling, Packaging and Shipping.

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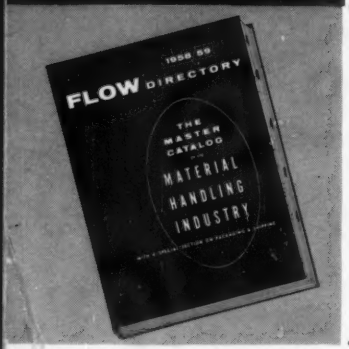

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